



SATURDAY, JULY 26, 1873.

### Consolidation Engine Built by the Danforth Locomotive & Machine Works.

The accompanying cut represents one of several engines of the "Consolidation" pattern recently built by the Danforth Locomotive & Machine Works at Paterson, N. J., for the Baltimore & Ohio Railroad. The engines in question have cylinders 20 inches diameter of bore and 24 inches stroke of piston. The crosshead is carried by a single large slide, an arrangement frequently used at these works. There are four pairs of driving wheels, 4 feet 2 inches in diameter, and under the front end of the engine is a two-wheel swing truck, which, however, carries but a small part of the weight, nearly all of which is upon the drivers.

The barrel of the boiler is 4 feet 2 inches in diameter, and the boiler is of the usual wagon-top form. There are in the boiler 165 flues, 13 feet 9 1/4 inches long and 2 1/4 inches outside diameter. The fire-box is 10 feet long and 2 feet 10 1/2 inches wide, giving a grate area of 28.95 square feet. The fire-box is deeper at the front than at the rear end. The rear axle is carried under the fire-box. The boiler has one dome, placed, as is usual, over the fire-box.

The tender is carried on two four-wheel iron trucks, and the tank holds 2,400 gallons of water.

The weight of these engines when ready for the road is about 48 tons. Of their capacity for work some idea can be formed from the following extract from the Baltimore Sun of July 2:

"At a test recently made of one of these engines left Piedmont with a train of fifty loaded coal hoppers, and an officer's coach, in charge of Engineer Jacob Wise and Conductor Edward Kerns. The total weight of the coal in the cars was 541 tons, which was drawn over the 'tunnel grade' to Cherry Run, a distance of 95 miles, at the rate of 13 miles an hour. From Cherry Run to North Mountain, grade fifty feet to the mile, the engine drew a train of fifty loaded cars and the officer's coach, in all 676 tons. Returning from Martinsburg the same engine, with Thomas Kerns as engineer, drew the trains of three ten-wheel camel-back locomotives, aggregating 633 tons, to Piedmont, at a speed of 15 miles per hour, known as fast freight time."

It is further stated that the Baltimore & Ohio Company has resolved to adopt the "Consolidation" pattern for its heavy freight engines, and that orders have been given for the construction of a number of that pattern at the Mount Clare shops.

### An Engineering Library and Museum.

At a meeting of the American Society of Civil Engineers, July 2, a paper was read by Mr. G. Leverich urging the importance of the establishment of a library and museum. It said:

The library of the American Society of Civil Engineers should contain all that has been published relating to the history and prosecution of engineering, maps and profiles of every canal and railroad, their complete reports, those of the several municipal, State and Federal departments, and select published matter referring to other and miscellaneous works, public and private. It should also contain standard works of reference in science and art, and indeed lack nothing required of a library by the student or accomplished engineer seeking professional knowledge. The museum should be an adjunct of the library, and illustrate in matter much that is there described in words; efficiently representing by models and samples, the proportions, form and physical characteristics of the agents of engineering effort.

Much professional knowledge is recorded in the several technical journals of the day, and this is almost inaccessible to the busy members of a profession which allows but little time or opportunity for exhaustive reading. Complete treatises are published from time to time, upon theoretical or practical subjects, full of matter valuable to engineers who are unable to possess or peruse them. These, as issued, should form a part of the library of this society, and be made available to members.

The advantages of such a library should be placed at the command of all connected therewith, wherever they may happen to reside, so that on request, complete examinations upon specific topics could be made, pertinent extracts copied, and proper references given; therefore

Whereas, The foundation of a library and museum, which contains within itself all accessible published matter relating to the history, theory and practice of engineering, the construction and management of public improvements and the methods and cost of manufacturing operations, with illustrations by models and samples of the results thereby obtained, must be invaluable, not only to the profession, but to all who are interested in the pursuit or the application of practical knowledge.

Resolved, That a Committee, consisting of the President and nine other members to be named by him, with power to fill vacancies, be appointed to devise a plan whereby such a library and museum may be founded; the funds obtained for its collection, management, increase and maintenance, a suitable place secured, where it and other possessions of the Society may be preserved, and its advantages enjoyed by members and others connected therewith, irrespective of their location; the committee to report to this Society before October 1 next; the report to be printed and distributed to members for examination and approval, and action thereon made a special order for the annual meeting to be held November 5, 1873.

The resolutions were adopted.

The committee appointed under the resolution thus adopted

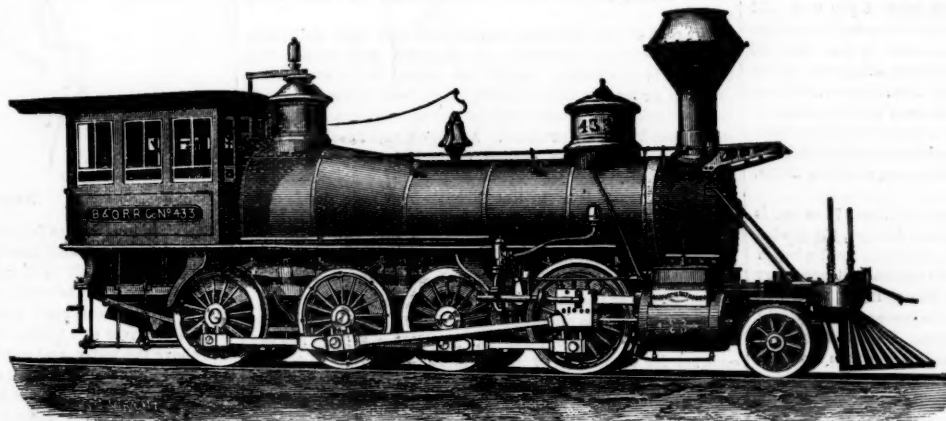
consists of Mr. Horatio Allen, of New York; Col. Julius W. Adams, of Brooklyn; Mr. E. S. Chesbrough, of Chicago; Mr. Alfred P. Boller, of New York; Mr. Thomas C. Clark, of Philadelphia; Mr. James O. Morse, of New York; Mr. Charles Herman, of Louisville; Mr. G. Leverich, of New York; Mr. Charles Paine, of Cleveland, and Gen. Theodore G. Ellis, of Hartford.

### Apologies for Strong Bridges.

That there are other reasons than the ignorance or contemptibility of town authorities for the acceptance of bids for structures insufficiently strong, is shown very well by the following letter written to the Elmira Advertiser by Rev. Thomas N. Beecher, who, we believe, was one of the commissioners in charge of the letting of the highway bridge at Elmira, concerning which we had something to say at the time. Hence, it seems, when the commissioners accepted a bridge sufficiently strong at a good price, taxpayers grumbled because it cost so much. Doubtless the Dixon disaster came in time to stiffen the backs of commissioners and open the purses of taxpayers in many places, though many continue to think that a bridge is a bridge, and that the difference between one costing \$15 and one costing \$70 a foot is very likely divided between those letting and those taking the contract. Mr. Beecher's letter is as follows:

"The distressing accident at Dixon, Illinois, may serve a good use in bringing sharply before the tax-payers of Elmira a matter concerning which many questions have been asked, with reference to the new iron bridges, for the construction of which the Commissioners are responsible.

"A bridge connecting the two halves of a great city may stand twenty years with no special strain upon it. Such a bridge could be built for fifty dollars a foot. But suppose a fire along the river bank. At once the bridge becomes a convenient place for thousands to stand and look. And this one strain on the bridge is the heaviest that it will ever need to bear. This strain will come upon the sidewalks and upon the



CONSOLIDATION ENGINE BUILT BY THE DANFORTH LOCOMOTIVE & MACHINE WORKS.

sidewalk railings. Provision for this possibility is the explanation of the unusual cost of the bridges that have been approved by the commission.

"The strength of these bridges is to be such that if one hundred pounds were put upon each square foot of both sidewalks, it would tax but one-fifth part of the strength of the bridge to sustain it.

"During the last winter I made quite extended journeyings through Illinois, Iowa and Wisconsin, and found iron highway bridges very frequent. And I was pained to see that the strength put into them, though sufficient for ordinary traffic, was altogether insufficient for occasions occurring now and then, when a thoughtless people pack a bridge full to see a baptism or a fire.

"Main and Lake street bridges will be at least ten times stronger than necessary for daily use; but they will be just strong enough to bear the strain put upon them by such sudden emergencies. And as they are to stand for a hundred years or more, it has seemed the part of wisdom to make them strong enough to bear anything that can be loaded on to them during the hundred years."

### Railroad Legislation in Massachusetts.

The Boston Advertiser gives a brief summary of the railroad questions acted upon by the Massachusetts Legislature at its last session. In addition to the action taken on the Hoosac Tunnel question, which has been noted from time to time, a bill was passed confirming the reorganization of the Boston, Hartford & Erie Railroad as the New York & New England Railroad Company. A bill was passed continuing the grant of \$300,000 to the Lee & New Haven Railroad Company, but it was vetoed by the Governor. Bills were passed incorporating the New Bedford Railroad Company with a capital of \$2,000,000; also the East Boston Freight Railroad and the Ware River Railroad Company, which was formed out of the bondholders of the old corporation. There were bills reported extending the Milford & Woonsocket, Springfield, Athol & Northeastern, Worcester and Shrewsbury, and the Hopkinton, Milford & Woonsocket railroads for short distances. Extension of time was granted to the Salisbury & Exeter, Southbridge & Palmer, Canton & Hyde Park, Boston, Barre & Gardner, Plymouth County, Framingham & Lowell, Tyngsborough & Brookline, Marblehead & Lynn and other railroads; and locations were confirmed of the Lowell & Andover, the Old Colony, in Truro; Boston, Clinton & Fitchburg, in Framingham, and other roads in new places. The time for the construction of the union passenger depot in Worcester was extended two years; the petition for the extension of the Mansfield & Framingham Railroad was referred to the next Legislature; the several petitions for the relocation of the bridge on the Boston & Maine Railroad across the Merrimac River at Lawrence were referred to the Railroad Commissioners, who will report to the next General Court. The New Haven & Northampton Company was authorized to increase its capital stock to an amount not exceeding \$2,000,000, and there have been quite a number of other special acts passed for parties who could not work under the general law.

### Contributions.

#### Train Dispatching.

OFFICE OF THE LEHIGH VALLEY RAILROAD COMPANY, }  
WYOMING DIVISION,  
TRAIN DISPATCHER'S OFFICE, SUGAR NOTCH, Pa., July 18, 1873. }

TO THE EDITOR OF THE RAILROAD GAZETTE:

We have on this division what we term a "Blank B." In closed please find a copy, and also the instructions as to its use.

(BLANK B.)

LEHIGH VALLEY R. R.—WYOMING DIVISION.

Delivered ..... 187

Train Order Signal not out for ..... M.

Section Train ..... Operator.

[The following are the instructions for the use of the above blank:]

NOTICE.—"To Operators Wyoming Division.

"When you receive orders to flag and hold a train, you will display your train-order signal before giving your (32), and under no circumstance whatever must your signal be taken in until the train which you were ordered to hold has received its orders. Should any train arrive before the one which you were ordered to hold, you will deliver to conductor and engineer a copy of Blank (B) properly filled out. When you know that a train will arrive ahead of the one which you were ordered to hold, have your Blank (B) ready and hand it to the conductor and engineer so that there may be no delay to the train.

"O. O. ESSER."

You will notice by the instructions when an operator receives orders to flag and hold a train, he is required to display his "Train Order Signal" before giving his (32) and keep it displayed until the train which he has been ordered to hold has

received its orders; should any train arrive previous to the one which he was ordered to hold, he delivers to conductor and engineer a copy of "Blank B" properly filled out (but does not take a receipt for it).

Without the use of "Blank B," an operator receives orders to flag and hold a train, but knowing a train will arrive ahead of the one he was ordered to hold, he concludes to wait until the first train has passed before displaying his signal, and in so doing he runs a great risk of forgetting it. Again, a signal may be displayed, conductor and engineer go into the office, inquire "What orders?" The reply is, "No orders for you." They have nothing to show that the signal was not for them. The operator may have had orders for them, but mistakes their

number. The result may be the loss of several lives, beside a great loss of property. But with the use of "Blank B" there is no risk of his forgetting to display his signal at the proper time, as it is constantly displayed from the time he receives orders to hold a train until the train has received its orders.

A train arriving ahead of the one he is ordered to hold, the conductor and engineer go to the office and inquire "What orders?" Instead of "No orders for you," they are given a copy of "Blank B," which is a receipt in writing. Should the operator have mistaken the number of their train, it is observed at once by the conductor and engineer. WYOMING.

### Equating Grades and Curves.

TO THE EDITOR OF THE RAILROAD GAZETTE:

"J. S.," in the number for June 14, asks for information on the above subject, and I suppose every man in charge of a location must be more or less interested, and have asked either himself or some one else the same question.

The old edition of Vose's "Handbook of Railroad Construction" contains perhaps as good a discussion on the subject of grades as any work I have ever met with, and at one time the results were put into a formula, which was subsequently modified so as to include the effects of curvature. Such a formula, when made to include the effective length, to the stockholders, after years of working, is necessarily empirical only, and its use must be confined to making selections of surveyed lines that will have nearly equal land damages.

To find the level and straight working length of any line of railroad which has been properly "located":

Let  $L$  = the measured length in feet.

Let  $r$  = the total rise (sum of all ascents going in one direction) in feet.

Let  $f$  = the total fall (sum of all descents going in the same direction) in feet.

Let  $D$  = the total curvature (sum of all central angles of curves).

Let  $a$  = a coefficient, depending on the speed at which it is intended to work the line, given in table below.

Let  $t$  = the straight and level "equivalent working length" sought.

Then will

$$t = L + a \left\{ \frac{r+f}{2} + 0.01 D \right\}.$$

Speed in miles per hour.	Coefficient "a."
15.....	60.000
20.....	55.000
25.....	48.000
30.....	41.250
35.....	34.195
40.....	24.906
45.....	19.701

CHARLES A. SMITH.



## Railroad Engineering in the Cordilleras.

LIMA, Peru, May 26, 1873.

TO THE EDITOR OF THE RAILROAD GAZETTE:

As I have often been interested in reading the engineering correspondence of others, I will endeavor to contribute something to the general fund myself. I do not feel that writing for publication is my "forte" so much as "Gottschalk's forte" was the pianoforte, or Gen. Grant's forte was Fort Donelson.

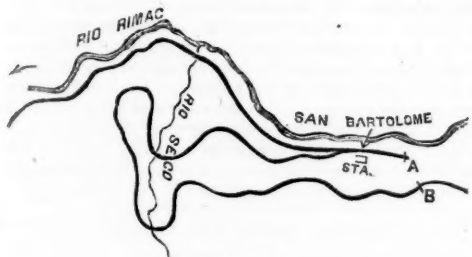
I happen just now to be here, where some extensive railroad engineering operations are being carried out. As the "Oroya Railroad" is rather an extraordinary one in many of its features, I will attempt a description of such of them as may likely interest your readers.

The "Oroya Railroad," as it is termed here, is intended to connect Callao (the principal port of Peru) and Lima (the capital) with Oroya, a small town of the interior, at the junction of two tributaries of the Amazon—the Jauja and Yauli rivers—the whole length of the road being about 140 miles. The eastern terminus, Oroya, is an insignificant town, but was chosen as a topographically suitable point of divergence to reach the important towns of the interior, Jauja, the mining district of Cerro de Pasco, &c. The extension of it to the head of the navigable waters of the Amazon—some 250 miles further—is also contemplated, and surveys for this purpose have been begun.

The contract for the building and equipping of the road was given to Henry Meiggs in 1869, for twenty-seven millions six hundred thousand soles in Peruvian bonds (a sol is the equivalent of the French five-franc piece), the bonds realizing 82 or 83 per cent. in the European market. The construction of the road was commenced January, 1870, the whole work to be completed in six years, in accordance with certain specifications, the principal of which were that the gauge should be 4 feet 8½ inches; finished cuts and fills 14 feet wide, except solid rock cuts, which may be 12 feet; maximum grade 4 per cent. (211 feet to the mile), which is allowed on curves as well as on tangents, except where the radius of curvature is less than 300 meters (about 985 feet). From 300 meters to 120 meters radius (395 feet), a 14° 30' curve as named in the United States, but 3 per cent. grade is allowed. Between all reversed curves a tangent of 40 meters is required. (The meter is the government standard here.) All bridges and viaducts to be of stone or iron; T rail, weighing 65 lbs. to the yard; fish-plates, weighing 20 lbs. a pair, etc.

The ascent from Callao, on the coast, to Lima, 7½ miles, is 450 feet. From Lima to Chosica, 26 miles further, the grades do not exceed 2½ per cent. The 4 per cent. grades begin shortly after passing this station, but do not make it necessary for the line to leave the valley of the Rimac River until San Bartolome Station, 13 miles further on, is reached. The height of this station is 4,905 feet above sea level. I know of no other road that, starting from the sea, rises to this height in 46 miles, distance, or in three hours' ride.

Here it was thought best to take to the mountain side to gain elevation by a development, as a configuration of the surface afforded an opportunity for doing so. It was done as shown in the following plan (Map No. 1), which represents a part of the road completed and in operation for the past nine months.



Map No. 1.

(All the accompanying maps are accurately reduced from maps of the location, the dotted portions of the lines representing tunnels.)

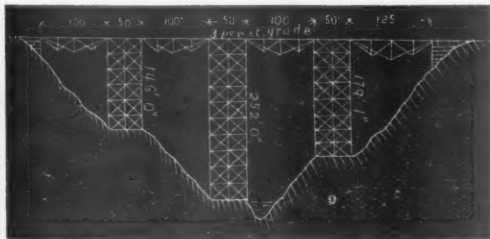
From A to B is 3½ miles by line of the road. In a direct distance they are 855 feet apart horizontally, and 545 feet apart vertically. A ride over this portion of the road is somewhat sensational, from the abrupt changes of position and view by the traveler. He also feels somewhat "elevated," in looking down on San Bartolome from the mountain side opposite the station.

As soon as the line has to take to the side of the mountain, the cuts and fills are very heavy. The sides of the mountain being very steep (as is evident from the ratio of horizontal and vertical distances shown in the accompanying maps), the cuts, even at the steep slope of 1 to 1, extend up the sides to a great height in many instances, and the slopes of the embankments often extend to the valley of the river, several hundred feet below the line of road. Where it is necessary to save the material from the cuts, the embankments are kept in place by heavy retaining walls.

From B to Verrugas Bridge, 2½ miles further, the line is from 400 to 550 feet above the valley, passing through two short tunnels in that distance, one of them being on a curve of 395 feet radius. One embankment (called here "Esperanza") near the first tunnel, but 240 feet in length, has a center depth of 160 feet, and contains 90,000 cubic yards, the slope on the lower side extending to the valley. In crossing this embankment the line leaves a cut 165 feet deep, and on the other side enters another cut 95 feet deep in center.

The approach to Verrugas Bridge is through a cut 105 feet deep. The center of the bridge is 250 feet above the bottom of the ravine, and the line then enters a cut 60 feet deep. The

annexed sketch gives an outline of the bridge and the chasm it crosses.



Verrugas Bridge.

Your issue of April 5, 1873, has such a complete description of the bridge and the devices used in its erection, from C. H. Latrobe, C. E., that I need add nothing further on the subject—except to say that the bridge receives the highest commendation from all who have seen it. There is constantly a large number of visitors over the road, many of them prominent men from all parts of Europe and America. The bridge as a specimen of American workmanship suffers nothing by comparison with anything of the kind that they may have seen elsewhere.

From Verrugas Bridge to Surco, 55 miles from Callao, the only notable work was Cuesta Blanca Tunnel, which is through a precipitous side of the mountain about 575 feet above the river, part of the line being on a 395 feet radius curve. As in many other places, the line here could not be surveyed. Triangulations were made to study the line and locate the approaches, and the course of the line was directed as the work progressed. On this road thus far no serious accident to any of the engineers has happened from surveying in the dangerous places. On some other roads building in Peru some fatal accidents have occurred in surveys.

The rock at Cuesta Blanca Tunnel was very hard and rough, scoring glass like a diamond. The diamond drill worked well here. A 24-inch turbine wheel was placed in the river, compressing air for one diamond drill. As a trial of what the drill could do, it bored 12 holes, each 36 inches deep, in seven hours, with about 20 lbs. air pressure. A larger turbine should have been used. The air was carried through 1,300 feet of pipe to reach the drill.

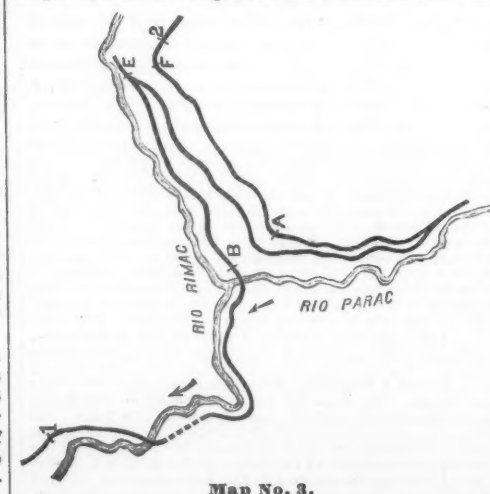
For the 42 tunnels of the line there are now here nine Leffel's turbine wheels of 30 to 40 horse power each, with a corresponding equipment of diamond drills. The Rimac River, with its fall of 200 to 300 feet per mile, furnishes a magnificent water power alongside of all the tunnels for compressing air, except for the tunnel at the summit of the Cordilleras.

The road is now in operation to the Ucuta Bridge, a short distance east of Surco (Map No. 2). A French firm has the contract for a number of the bridges, beginning with this one. The French bridges, like those of English manufacture, are riveted together when in position in the bridge, making their erection very tedious and costly on account of the skilled labor required at the locality, differing greatly from American bridges, in which as much labor is done in the shop as possible, and being put together with bolts when in position their erection is made easy and quick. But in total cost of finished work the English and French builders underbid Americans.



Map No. 2.

In the development here shown the distance from A to B horizontally is 570 feet, and vertically is 365 feet. The horizontal distance from C to D is 495 feet; vertical distance 360 feet; length of line from A to D is 4 miles. The grading of this is completed, and if the bridges were finished track could be laid



Map No. 3.

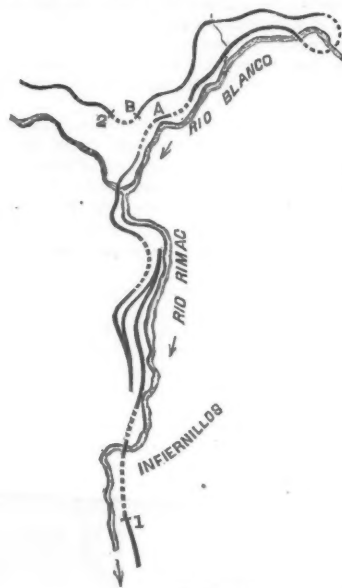
to Matucana, several miles beyond. A tunnel at Sacrape on a curve of 395 feet radius is one feature of this development.

The work all along up the valley is now of similar character to what I have described.

The next point of interest is the development of line at the Parac River, which is now under construction.

From 1 to 2, Map No. 3, is 5 miles by the line of railroad and in an air line is 1½ miles. Horizontal distance between A and B 985 feet, vertical distance 625 feet. Horizontal distance between E and F is 465 feet, vertical distance 535 feet, showing an average slope steeper than 1 to 1. Many such places are entirely inaccessible to bipeds. They are only accessible when the mountain sides have natural terraces or benches that give standing room; but the engineer's time is greatly consumed in climbing from point to point at no little personal risk.

The next point of note is the passage through the Infernillos, and the development of line at Rio Blanco ("Infernillos" meaning in Spanish "Little Hell.") The place is not entirely unsuggestive of the name).



Map No. 4.

The river here passes for some distance between two walls of rock that rise perpendicularly to heights variously estimated at 2,000 to 2,500 feet. For a considerable way the river here comes down a flight of stairs, roaring like a small Niagara. In passing under these high points the line crosses one tunnel, crosses the river on a bridge of 160 feet span at a height of 165 feet above the water, and enters another tunnel.

From 1 to 2 (Map No. 4) by line of road is 4½ miles, comprising eight tunnels. An air line from 1 to 2 is 1½ miles. Horizontal distance from A to B is 445 feet; vertical distance 310 feet.

The next development of any particular interest is at Chicla. From A to B (Map No. 5) by line of road is 4.9 miles, by air line 1.6 miles. This portion of the line has 1,776 degrees of curvature, an average of 362 degrees to the mile. From C to D the horizontal distance is 730 feet, vertical distance 570 feet.



Map No. 5.

Much of the line in this vicinity—and a portion of it near the summit of the Cordilleras—makes a profile that shows a large amount of "Gothic work," as it has been aptly termed.

The line from Casapalca across the summit and to the Rio de Vieja, a tributary to the Amazon, although between certain points, as shown by map (No. 6) it may appear quite straight, yet it is made up mostly of a succession of sharp curves. From A to B, a distance of 16.9 miles, the total curvature is 4,467 degrees—an average of 263 degrees per mile.

There are a number of short tunnels on the west side of the "summit tunnel"—burrowing through the "Gothic" points of the hills—where a curve of 395 feet radius is not sharp enough to fit around them and have but a deep cut instead of a tunnel. The "summit tunnel," being the one at the summit of the Cordilleras, is the one of most interest. This is at a height of 15,645 feet above sea level, and 3,850 feet long, going through the mountain under "Galera Pass," the grade being 680 feet from the surface. The work from both ends of the tunnel is now well under way. Previous to the present time the work has been done by hand labor, but now the tunneling machinery has commenced operations. It has, however, been so recently put in operation that no results of its probable performance have yet been obtained.

As it was thought that no reliable streams of water at a reasonable distance from the tunnel could be found, it was decided to compress the air by steam power for the use of the diamond drills. The steam power consists of four boilers—two at each end of the tunnel—each 17 feet in length, 45 inches in diameter, with return flues of 20 inches in diameter. The boilers and machinery—as is the case with all articles trans-

\* There are two W's on the line in addition to the one shown in Map No. 4—one at Tambo Viejo on the line a few miles down the river from that portion shown in Map No. 3, and one a few miles east of the summit.

ported in advance of the finished road—were made in sections of less than 300 pounds each, for packing on mules. The water obtained for the use of the boilers is somewhat alkaline, and slowly corrodes them. The fuel to be used is peat (found in the bogs at the heads of streams near the summit), coal and petroleum. To give you some idea of the cost of the fuel there, I may say that coal costs at the port of Callao from \$16 to \$20 per ton, at the present time. Transportation to summit \$75 to \$80 per ton. Total, say \$90 to \$100.

Sufficient time has hardly passed yet, since the machinery was put into operation, to estimate the average consumption of fuel per day. The cost of petroleum at the summit to that of coal, in weight, is as 8 to 7.

Petroleum is found in great abundance in Tumbes and Nigritia, near the coast of the north of Peru. The special appliances for using it under these boilers were made in the shops of the road in this place.

Rand & Waring's engine and compressor is used, two at each end of the tunnel; steam cylinder 12x30 inches, air cylinder the same size, to run 60 revolutions per minute.

the road has been fearful—the worst portion being between the thirtieth and fiftieth mile, where the "Oroya fever" mostly prevails. When attacked with this fever, the safety of the invalid seems to be in its breaking out into "Verrugas" boils, which are excrescences resembling blood sacks, growing out of various parts of the body, in all sizes, from that of a pea to a walnut. When any one has his frontispiece embellished with them, his good looks, if he had any, are effectually damaged for the time being.

The disease has popularly been attributed to drinking the water of the region, but several analyses of the water fail to show any cause for disease in it, being pronounced chemically pure for cooking or drinking. Mr. Meiggs has incurred large expense to ascertain the cause of the disease and a correct treatment of it, but it puzzles the medical fraternity yet. The hospital and medical attendance connected with every working camp on the various roads he is building is quite a feature of his organization.

In the higher altitudes some fevers are prevalent among the workmen, where they were not supposed to exist hitherto.

diameter; six have 17x22-inch cylinders, three pairs of 48-inch drivers each.

There are also two tank engines for switching, with 10x18-inch cylinders and two pairs of 36-inch drivers each.

One of the road engines loaded for a trip weighs as follows: Engine, 36 tons; tender, 10½ tons; water, 15 tons; coal, 7 tons; total, 68½ tons.

The average consumption of coal is 65 lbs. per mile. A full load for an engine to San Bartolome is four to five cars loaded with fifteen tons each (full load being 100 to 125 tons) over a 4 per cent. grade and curves of 395 feet radius at 12 miles per hour.

A Fairlie engine has been ordered some time since to give it a trial alongside of the American engines.

The rolling stock is entirely from the United States. Gilbert & Bush, of Troy, manufacture the cars, which consist of first and second-class coaches, baggage, box, stock and flat cars.

On account of the heavy grades unusual precaution is taken in the material and strength of the brakes. In holding a train on such grades the best material for brake-shoes is a species of willow of the country. On a down grade run of 40 miles the brakes heat the rim so much that it is often cracked by the expansion.

Most of the buildings of the road are of iron, made in England, galvanized corrugated iron being used for the roof and sides. This last-named article has been of the greatest service during the construction of the line, in being a portable material for mule packing, not easily damaged, adaptable to various uses in camps, and capable of being used over many times.

A telegraph line has been built from here to Oroya, the eastern terminus of the road. The posts are of heavy sheet iron galvanized, made in joints like stove pipes, the lowest joint being of cast-iron, a couple of bars passing through it transversely in the form of a cross.

W. W. Evans, C. E., and J. S. F. Spinney, Esq., No. 47 Exchange place, New York, purchase and inspect all rolling stock and machinery sent here from the United States, and it is unsurpassed in quality anywhere.

Mr. Meiggs interprets the letter of his contract very liberally in favor of the government—evidently preferring that his profits should suffer rather than his reputation as a contractor. The work in all details is of the best description—often being much better than there can be any occasion for.

Henry Meiggs, Esq., is the contractor and negotiator with the government, but the executive department of the work is filled by his brother, John G. Meiggs, Esq., who has but few equals in that line of business.

I must add and indorse what I heard an Englishman remark lately, that "by their generous treatment of employees and attention to visitors and liberality to the unfortunate, they have done more to elevate American character here than could be done by state diplomacy."

The grand, sublime, majestic—or whatever it may be called—of the surroundings of the line from here to Oroya I have not attempted to describe, it not being in my line. With the ruins of old Inca towns along the route, and associations conjured up by a remembrance of Prescott's conquest of Peru, the remarkable mountain scenery, etc., there is unlimited material for word-painting; but I must leave that to some one who is accustomed to writing from imagination—say some war correspondent of the New York Herald. He could have a sensational finishing touch put on the trip by a ride down the road in a hand-car. To whip around those sharp curves at 25 miles an hour, as I have done, the car running of itself, is just a little on the sensational order.

When the route is finished for tourists, a conductor's check could be made interesting, as follows:

Distance in miles from Callao.	STATIONS.	Elevation above the level of the sea, in English feet.	Distance in miles from Callao.	STATIONS.	Elevation above the level of the sea, in English feet.
7½	Lima.	448	5¾	Surco.	6,635
11¾	Quir.	208	6¾	Mateo.	7,738
15¾	Santa Clara.	1,311	7¾	San Mateo.	10,339
23¾	La Chocoma.	2,800	14¾	Tunnel en la Cima.	15,645
44¾	Cocachacra.	4,528	119	Yauli.	13,429
46¾	San Bartolomé.	4,905	136	Oroya.	12,178
51¾	V. Agua de Verru gas.	5,240			

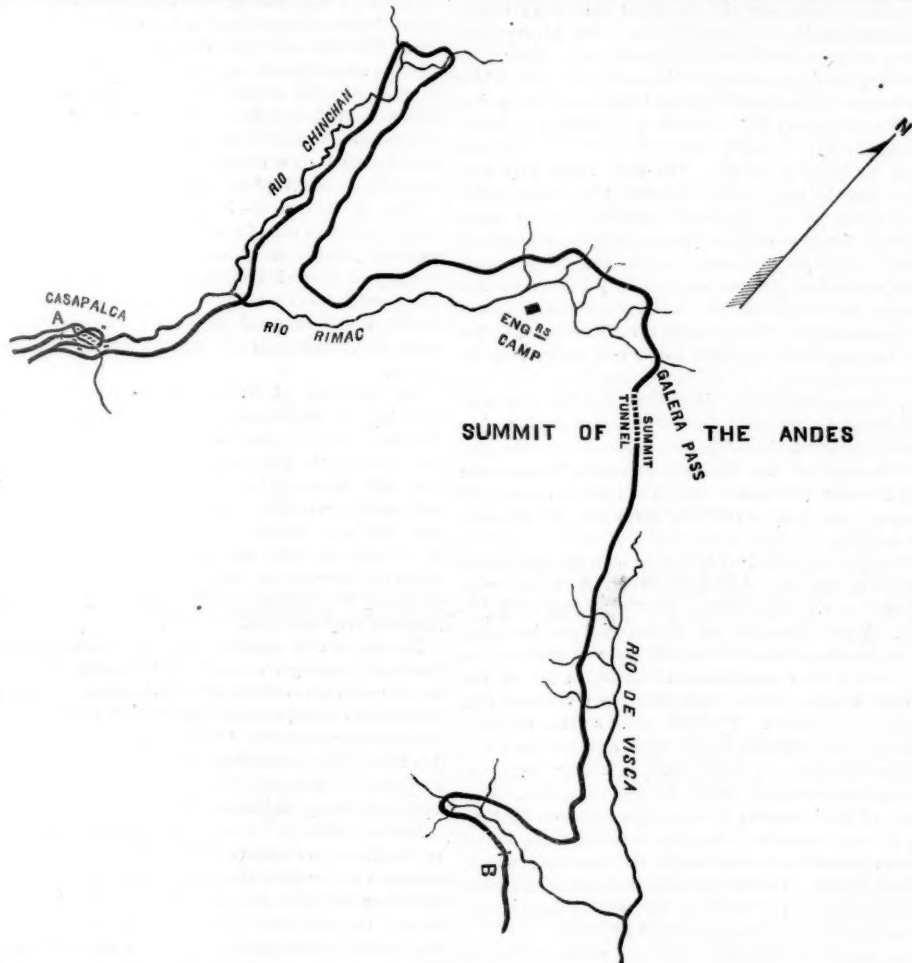
In closing, I wish to acknowledge my obligations to W. H. Cilley, Superintendent; M. Van Brocklin, Resident Engineer; and Nathan Crowell, Master Mechanic, for various items of information outside of my work.

My letter has now more than doubled what I set out to write.  
JNO. MCGEE.

#### Effects of a Storm.

A correspondent, writing from Quincy under date of July 5, says:

"A severe storm passed a few miles north of here yesterday afternoon. At Keokuk, Iowa, a train of excursionists was ready to leave on the Missouri Valley & Western for Quincy, Ill., at 7:40 p. m., but the conductor did not think it safe to start, and waited until 9 p. m., when, the fury of the storm having partly subsided, they proceeded a short distance, and found a house upon the track. By the time they had that obstruction removed word was brought that the bridge over the Des Moines River was impassable, one span having washed out. The train was backed up to the station, where it remained over night. No train has yet arrived over that road, at 5 p. m., July 5. At Augusta Station, on the Chicago, Burlington & Quincy Railroad, eleven cars (some of them loaded) were blown over, leaving one on the track. A car blew out of switch at La Prairie, on same road, and ran to next station (Keokuk Junction), where it was secured. At Plymouth (same railroad) a car blew out of switch with brake set."



Map No. 6.

The American diamond drill, with hydraulic feed, is used—two or more drills at each end of the tunnel.

The grade of the tunnel is an up grade, from each end, and oined in the center by a vertical curve. For ventilation in driving out smoke from blasts of foul air there is used in each heading a Sturtevant blower, with capacity to displace 1,800 cubic feet of air per minute.

At the beginning of the tunnel considerable difficulty was encountered by the material not being of requisite solidity to stand without lining, being composed of the disintegrated portions of the adjacent peaks (many of these peaks at the sides of the pass are very high—some having an altitude of 18,000 feet and over above sea level); but now solid rock of a granite character is reached and no further trouble of caving in is apprehended, and lining hereafter is not expected to be necessary.

The altitude and climate are very trying on "flesh and blood." The "thin air" makes exercise of any kind very exhausting, and the snows, alternating with hot sunshine, make a very severe climate. A delicate constitution would soon be wrecked. The "sorroches," by which a new comer is often introduced in the high altitudes, makes him very sick, and has in some cases been fatal. In its symptoms it is much like sea-sickness, only "a good deal more so."

From the summit of Oroya, the terminus, the line follows the Rio del Visca and Rio Yauli. The grading of this 30 miles is almost completed, being done for the most part by the native Indians or "peons," as they are called. Being natives of these high altitudes, they are better capable of enduring labor here than foreigners.

The line east of the Cordilleras was not nearly so difficult in location or construction as the west side, the slopes of the mountain being much more smooth and regular.

The above comprises the principal points of interest in regard to the "line" of the road, etc. Some other items may be of interest.

The whole force employed on the line at one time has been 8,000 men, the laborers being principally native Indians or peons, Chilanoes and Chinamen.

The mortality among those employed on the first 60 miles of

From the character of the country, the indispensable mule figures quite largely in construction of the road. All articles used in advance of the iron track must be packed on mules—wagon roads being entirely out of the question. When a mule is loaded with some long timbers laid lengthwise of his "deck" he could make an ugly charge if he only knew it; and when he makes a sweep by turning round suddenly, there is a very general clearing of the way to give him room.

The making of mule roads that will not be interfered with by the cuts, fills or blasts of the railroads has cost more per mile than the grading of many Western railroads in the United States.

The capital invested in this kind of transportation is \$115,000, representing 850 mules and 159 horses; cost of feed and drivers, about \$3,000 per day. Packing and driving mules is a special occupation among the natives, and their packing often shows great skill.

Some tremendous blasts are used, called "polvorases." As most of the work is side-hill cuts, the heavy blasts work to advantage. The heaviest I know of being used was 600 (six hundred) barrels of powder in a single blast in a 60 feet rock cut. The result showed that twice as much was used as was necessary. About 4,500 quintals (of 112 lbs. each) are now used per month. Giant powder is used to a considerable extent. Nitro-glycerine has not been used that I know of.

The roadway is in excellent condition as far as the track is laid. No frost or heavy rains to contend with makes it easy to keep it well surfaced. In fact, the rain region is not entered until 35 miles from Callao. In the rainy region trouble is anticipated by the rains loosening the heavy embankments which stand on very steep sides of the mountains, and filling up of cuts, which are necessarily made with very steep sides.

On sharp curves the rails are connected at the middle and ends with tie-rods passing through the rail to guard against any possible contingency of spreading.

The equipment of engines consists of four Danforth & Cooke and twelve Rogers engines. Ten of these have 18x24 inch cylinders, three pairs of drivers each, of 45 inches to 57 inches





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CONDUCTED BY

S. WRIGHT DUNNING AND M. N. FORNEY.

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## Editorial Announcements.

**Removals.**—The Chicago office of the RAILROAD GAZETTE has been removed to No. 71 Jackson street, opposite Third avenue. The New York office of the RAILROAD GAZETTE is removed to Room 181, No. 73 Broadway, opposite the upper elevator landing.

**Correspondence.**—We cordially invite the co-operation of the railroad public in affording us the material for a thorough and worthy railroad paper. Railroad news, annual reports, notices of appointments, resignations, etc., and information concerning improvements will be gratefully received. We make it our business to inform the public concerning the progress of new lines, and are always glad to receive news of them.

**Inventions.**—No charge is made for publishing descriptions of what we consider important and interesting improvements in railroad machinery, rolling stock, etc.; but when engravings are necessary the inventor must supply them.

**Articles.**—We desire articles relating to railroads, and, if acceptable, will pay liberally for them. Articles concerning railroad management, engineering, rolling stock and machinery, by men practically acquainted with these subjects, are especially desired.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, except in the advertising columns. We give in our editorial columns our own opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

## THE MICHIGAN CENTRAL REPORT.

Mr. Joy has made a very long report this year, intended, of course, to explain fully and satisfactorily to the shareholders the condition, necessities and prospects of their property, and to justify the policy of the management. But his report, to a very unusual extent, has a general interest, for it discusses quite elaborately and in many particulars with irrefragable arguments from established facts in the experience of his company, questions which concern closely nearly every railroad with a rapidly growing traffic in the country. There was a special reason why these questions should be carefully treated in this report, for the Michigan Central, which for many years paid 10 per cent. cash dividends, and whose stock sold on the Exchange for 120 to 130, paid the last January dividend in stock and passed the July dividend altogether, and the stock this month has touched 90, we believe. People whose shares have lost one-fourth of their marketable value in a single year are usually inclined to be dissatisfied, and at least are apt to want to know the reason.

Two charges are made against the Michigan Central management (and many others): that burdensome obligations have been incurred for unprofitable branches and feeders, and that the proportion of working expenses to earnings has been largely increased.

Now it cannot be denied that a number of unprofitable branches have been secured by obligations which cannot be considered other than burdensome (for the present), since the expenditures incurred exceed the returns secured. In this the Michigan Central is by no means alone, a very large number of Western companies having within a few years past bought or leased, usually with guarantees of bonds, numerous branches and extensions, and most of them, perhaps, finding these new lines unprofitable. And now, when the smallness of their earnings is apparent, a great many critics, some of them generally cautious and capable ones, have charged railroad managers with recklessness and bad judgment for so burdening their companies.

The argument seems to be: "The road was doing

well without these branches; having secured them, it does poorly; therefore it erred in taking them." There is a fallacy in this, however, for it assumes that but for the action of the old company the new lines would not have been constructed. This, as any one knows who has watched the progress of railroad enterprises in the West, has been very rarely true. In most cases, in the well peopled States at least, the railroad company has not been the first mover, unless, indeed, in order to "head off" some other scheme which threatened its traffic; and in most cases we may safely say that the new railroad lines, or similar ones, would have been constructed not only without the support of the old companies, but in spite of their opposition. The question with the older companies was, not whether there shall be new railroads in the territory where we get our traffic, but whether the roads which are sure to be constructed shall heed or compete with our road. No one seems to have seen and explained this more clearly or earlier than Mr. Joy himself, who, while his company was in the midst of contracts for branch lines, in one of his reports spoke deprecatingly of the readiness with which new lines could be constructed and explained the policy which the company felt compelled to adopt, giving it branches which it really did not want, yet could not afford to leave to rivals. The new roads have been largely built by the people on the line, who, having made liberal subscriptions to the stock, as individuals or municipalities, found it easy to raise enough on mortgage to complete the line. At such times it was often easy to obtain control of lines at a very low price—much less than the cost of construction—and though that little was perhaps more than the line could earn interest on, it has made the acquisition of lines which may before long become valuable, and in other hands have been very injurious, comparatively easy. Doubtless mistakes have been made, but as a general rule these considerations have justified the policy of absorbing new lines.

We find that of the Michigan Central's branches the Joliet Division (44 miles), the Air Line Division (103 miles), and the Nunica Division (42 miles) did not earn their working expenses, the aggregate deficit being \$168,364.81, while the other four branches, with an aggregate of 288 miles of line, earned \$483,478.60 net. So the branches altogether made net earnings to the amount of \$315,113.78. These branches are all leased lines, however, and the rentals amounted for the year to \$685,908, so there was a loss amounting to \$370,794.21 on the branches, which is about equivalent to a dividend of 2 per cent. on the stock. We shall make a great mistake, however, if we count this as the whole result of the working of the branches. A chief object in leasing them was to secure their through traffic for the main line. The amount of this is usually left to conjecture, but Mr. Joy gives the exact amount of the gross earnings made on the line from the traffic contributed by the branches, which was \$887,517.59. The net earnings from this traffic were probably more than \$100,000, so the loss sustained on account of the branches becomes about \$270,000.

With regard to working expenses, a statement for a series of years will show what the fluctuations and the recent tendency have been. We give the percentage of expenses to earnings:

Year.	Percentage.	Year.	Percentage.
1864 5.....	58.0	1869 70.....	64.0
1865 6.....	63.2	1870 71.....	71.1
1866 7.....	65.4	1871 72.....	70.6
1867 8.....	69.7	1872 73.....	68.3
1868 9.....	61.2		

The average for the five years in the first column is 61.7, and for the four years in the last column 68.5 per cent. Now this difference of 6.8 per cent. of the receipts for the last year amounted to very nearly \$500,000, and would have been by itself sufficient for a dividend of 2½ per cent. on the capital stock.

In the Michigan Central's case, doubtless, part of the increase in working expenses has been due to the inadequacy of the road and equipment, but the general rule affecting this feature is well enough set forth in Mr. Joy's statements of the necessity of enlarging capacity and carrying a larger traffic, because of the lower rates prevailing. A corollary of this decrease of rates as traffic increases is an increase in the proportion of working expenses as the rates decrease. If it costs \$40 to haul a train a given distance, and we get \$80 for hauling it, the working expenses are 50 per cent. But if the price is reduced from 80 to 60, then the working expenses rise to 66 2-3 per cent.; if from \$60 to \$50, the expenses become 80 per cent. Now, the cost of transportation per ton per mile is less with a large tonnage than with a smaller one, but this reduction has not been, and is not likely to be, so great as that in the charges.

Perhaps the most striking part of Mr. Joy's report is that in which he shows so clearly the necessity of large expenditures on capital account on such a line as the Michigan Central, simply to keep it out of bankruptcy. It will not do to be satisfied with your condition and your traffic, for the traffic which pays 10 per cent. dividends

this year, three years later may not pay the interest on the bonds. The conditions are such as are common on a very large part of our railroads—rapidly growing traffic and rapidly decreasing rates. The two phenomena are almost inseparable, and naturally. The large traffic can be done much cheaper than a small one, and in order that rates might be maintained it would be necessary that the number of separate railroads should increase as fast as the traffic. But true economy demands that there should be as few and not as many railroads as possible to carry the traffic, and that each line should be prepared for and have the largest traffic possible. It is not left to the old companies to decide whether they will enlarge their business: they must do it or die. For railroad companies in a fast growing country there is capital punishment for stagnation.

If a corporation does not provide means for carrying a larger traffic it must keep up its rates, and if it keeps up its rates it will lose all its business to its rivals. The great improvements now being made in some of the trunk lines between New York and the West are sure to become necessities to all; for the cheapening of the cost of transportation through these improvements is almost sure to be followed by a cheapening of the price, and a comparatively small reduction in the present prices, unaccompanied by a considerable increase in the traffic, would soon bankrupt the richest railroad company.

This is the secret—if it can be called one—of the almost constant calls for additional capital made by most wealthy American railroads, the peculiar admirable feature of which is that they are constructed in the first place with no expenditure for facilities which the first traffic is not expected to need, but so that they can be made to accommodate any amount of traffic as fast as it comes.

The tendency of traffic is shown very clearly by the table of tonnage mileage and receipts per ton per mile. This is a subject which we have investigated with much care during the past year, and there can be no question that this tendency to carry very much larger traffic at very much lower rates is general. On the Michigan Central, Mr. Joy shows that within nine years the increase in tonnage mileage has been very nearly 200 per cent., while the increase in freight earnings has been but 72½ per cent., the average receipts per ton per mile having fallen off very nearly 50 per cent.

The increase in business is almost entirely in freight. Tables of passenger mileage are not given, but the number of passengers carried and the passenger earnings are given for 27 years, and these show that almost the same number were carried in 1864-65 as in 1872-73, and that this is very little more than the average of the intermediate years, the passenger earnings having remained nearly stationary, being largest in 1865-66, and least in 1871-72.

The very different values of the different lines worked by the Michigan Central are strikingly shown by a simple statement of the gross receipts per mile, which vary from \$20,691 on the main line to \$1,183 on the Air Line Division. But this even does not show the whole difference in the profitability of the lines; for while the main line is worked at an expense of 66 per cent., the working expenses of the Air Line Division were 185 per cent., and while there was a net income of about \$6,900 per mile on the main line, there was a net loss of \$1,000 per mile on the Air Line Division.

The following is a statement of the receipts per mile and percentage of expenses to receipts on the main line and the several branches:

	Receipts per mile.	Percentage of expenses.
Main Line.....	\$20,691	65.96
Joliet Division.....	3,033	136.35
Grand River Valley Division.....	3,232	43.00
South Haven Division.....	2,433	39.70
Air Line Division.....	1,183	184.80
Nunica Division.....		132.22
South Bend Division.....	1,920	51.41
Jackson, Lansing & Saginaw Division.....	4,992	66.27

We do not give the receipts per mile of the Nunica Division because we are not sure what its mileage is.

Working expenses of 136, 152 and 185 per cent. seem bad enough, but in addition to these the Michigan Central has to pay a rental, which, as we have seen before, makes up a total loss of about \$370,000 on these branches.

The report gives a table showing the tonnage shipped from each station, which is striking proof of the manner in which traffic is centralized. About 21½ per cent. comes from the branch roads, and there are only nine stations out of the 65 which contribute so much as 1 per cent., yet these furnish 66½ per cent. of the total shipments, leaving but 12 per cent. to come from the other 56 stations, or an average of about 3,000 tons each per year.

The surplus last year above working expenses and interest was \$1,444,077, which is only \$63,347 less than the surplus of the previous year, when the dividend was 10 per cent. This was sufficient for a dividend of 7.7 per cent. But meanwhile the Treasurer's report shows that the construction account was increased by about \$5,400,000. The new issue of bonds is not likely to cover the whole cost of the improvements in progress, so that the



net earnings are actually invested in the capital account. The expectation, which is shown to be a reasonable one, is that the new capital will bring a good return; but whether it will or not, we have seen that the investment could not be avoided without the certainty of ruin.

#### A Discrepancy.

At the last meeting of the Master Car Builders' Association, the dimensions proposed by the Association of Bolt and Nut Manufacturers, for the sizes of nuts, was made the standard for the construction of cars. At a previous meeting the Franklin Institute system of screw threads was made the standard for car building, and the same has also been adopted by the Master Mechanics' Association, the Association of Machine Manufacturers, and by the Navy Department of the United States. At the present writing we are not able to say whether the resolution in which the Franklin Institute system of threads was adopted also included the same system of nuts, but if it did not it is quite obvious that it should. In either event the late action seems to have been an oversight, because it is impossible to cut a perfect thread of the Franklin Institute system in the nuts of the Bolt Manufacturers' standard. This will be very obvious if we compare the diameter of the holes in the latter with the diameter at the root of the thread of the Franklin Institute screws, as given below:

Outside Diameter of Screw.	Diameter of Hole in Bolt, screw at the root of thread.	Diameter of Hole in Bolt of standard nuts.	Short Diam. of Bolt of standard nuts.	Short Diam. of Bolt & Nut of standard nuts.
1/4 inch	1/4 inch	1/4 inch	1/4 inch	1/4 inch
5/16 inch	5/16 inch	5/16 inch	5/16 inch	5/16 inch
3/8 inch	3/8 inch	3/8 inch	3/8 inch	3/8 inch
7/16 inch	7/16 inch	7/16 inch	7/16 inch	7/16 inch
1/2 inch	1/2 inch	1/2 inch	1/2 inch	1/2 inch
5/8 inch	5/8 inch	5/8 inch	5/8 inch	5/8 inch
3/4 inch	3/4 inch	3/4 inch	3/4 inch	3/4 inch
7/8 inch	7/8 inch	7/8 inch	7/8 inch	7/8 inch
1 inch	1 inch	1 inch	1 inch	1 inch
1 1/8 inch	1 1/8 inch	1 1/8 inch	1 1/8 inch	1 1/8 inch
1 1/4 inch	1 1/4 inch	1 1/4 inch	1 1/4 inch	1 1/4 inch
1 3/8 inch	1 3/8 inch	1 3/8 inch	1 3/8 inch	1 3/8 inch
1 1/2 inch	1 1/2 inch	1 1/2 inch	1 1/2 inch	1 1/2 inch
1 5/8 inch	1 5/8 inch	1 5/8 inch	1 5/8 inch	1 5/8 inch
1 3/4 inch	1 3/4 inch	1 3/4 inch	1 3/4 inch	1 3/4 inch
1 7/8 inch	1 7/8 inch	1 7/8 inch	1 7/8 inch	1 7/8 inch
2 inch	2 inch	2 inch	2 inch	2 inch

It will be seen from this table that the diameter of the holes in the nuts of the Bolt and Nut Manufacturers' Association are larger, in nearly all cases, than the diameter of the screw at the root of the thread, so that it would be impossible to cut a perfect thread in them. The reason given for adopting this size for the hole is that it is better adapted to the threads in ordinary use, which are not cut so deep usually as is required by the Franklin Institute thread; and, in the second place, the diameter of the ordinary merchant bar iron is nearly always larger than the nominal sizes, and therefore nuts to be used on such material should be larger.

It will also be seen, from the last two columns, that the short diameter of the Bolt and Nut Manufacturers' standard nuts is also larger than the Franklin Institute system. Two reasons can be given for this. First, nuts can be punched, of the larger diameter, out of poorer iron, without splitting, than is possible if they are made as small as the dimensions given for the latter system. The fact that the larger nuts will weigh more may, perhaps, not be without influence with the manufacturers, who sell their wares by the pound.

Without reference to the motives for adopting either standard, it is obvious that the action of the Car Builders' Association should be reconsidered; otherwise confusion will be sure to result therefrom, which will cause much inconvenience and bad workmanship in the threads of nuts.

It may not be amiss to call attention to another fact in this connection, in which master mechanics and others concerned in locomotive work are more interested than car-builders. We refer to the size for the short diameter and thickness of rough and finished nuts. The Franklin Institute standard provides for two sizes, the one being so much smaller than the other that a finished nut can be made from the rough size. In adopting the Franklin Institute system this was the only point from which the Navy Department dissented, and instead of making two sizes for nuts it determined to make the dimensions given in the Franklin Institute system for rough nuts the standard for both rough and finished. This permits the use of one size of wrench for both kinds of nuts. It is, however, open to the objection that two sizes must be made for one diameter of bolt, one of them to be used rough, the other to be finished. This evil we believe to be less than the confusion and the inconvenience which would be caused by the use of wrenches of different sizes.

It is therefore desirable, we think, that the Master Mechanics' Association should confirm the action of the Navy Department, and if the former has adopted the Bolt and Nut Manufacturers' standard, of which we are not now sure, to reconsider its action.

#### Record of New Railroad Construction.

This number of the RAILROAD GAZETTE has information of the laying of track on new railroads as follows:

**Portland & Ogdensburg.**—Extended from North Conway north and west 12 miles to the foot of the White Mountains at Upper Bartlett, N. H. **Ware River.**—Extended from Gilbertville northwestward 7 miles to Barre Plains, Mass. **Boston, Concord & Montreal.**—The branch to the White Mountain House has been opened from the junction near Littleton eastward 8 miles to Bethlehem, N. H. **Long Island Central.**—Extended from Bethpage Junction southeastward 5 miles to the crossing of the South Side Railroad. **Grand Rapids & Indiana.**—Extended northward 13 miles to a point 35 miles north of Fyfe Lake. **Old Colony—Cape Cod Division.**—Extended from Wellfleet northward 15 miles to Provincetown, Mass., very near the extremity of Cape Cod. **Harlem River & Port Chester.**—Track laid from Mott Haven to New Rochelle, N. Y., 10 miles.

This is a total of 60 miles of new railroad.

**SLEEPING CARS** seem suddenly to have become popular in Europe. Besides the lines supplied with our American Pullman cars, which we have noticed heretofore, coaches designed by Col. W. D. Mann, also an American, but whose inventions are not used here, so far as we know, have been introduced on several European lines, and English journals of the 5th have announcements offering to the public shares in "Mann's Railway Sleeping Carriage Company, Limited," which is organized with a capital of £200,000, has provisional contracts for running cars on lines from Calais and Boulogne to Paris, from Calais via Brussels to Berlin, from Paris to Cologne, from Paris to Brussels, from Ostend via Brussels to Berlin, from Ostend to Cologne, and from Paris via Strasbourg to Vienna. This company proposes to do business precisely as the Pullman Company does in this country—that is, the sleeping-car company will own the coaches and manage them with its own servants, and receive the payments for their use above the regular fare, maintaining only the interiors, while the railroad company hauls the cars, supplies oil, fuel and lights, and maintains the running gear and exterior structure, receiving the ordinary fare. Thus the railroad company virtually is relieved from the expenditure of capital on account of coaches in return for hauling their extra weight, which in the case of Pullman cars is usually equal to the entire weight of an ordinary first-class car, and probably gives at least three times the dead weight per passenger.

The Pullman cars are to run, we believe, between London and Edinburgh, which is probably the best route in Great Britain to test the value of sleeping cars, being a long one (about 400 miles), and with an immense passenger traffic. The Pullman Company has had a number of coaches constructed at its works, in Detroit, especially for this line, and very nearly of the American pattern, we believe, except a little narrower, to suit the tunnels and platforms, and with the large English wheels, instead of the American cast-iron wheels, on the trucks. These cars are quite unlike anything to which Englishmen are accustomed, and the Mann cars are more like the carriages commonly used in Europe; but the experience of the Pullman Company, and the proved comfort and convenience of its cars, are likely to make their foreign experiment a success, in spite of prejudices.

THE ERIE RAILWAY, according to one of those London journals which can see nothing but unbroken prosperity for that company, the Atlantic & Great Western, and such others as Mr. James McHenry may happen to be interested in at the time, is now likely to have its traffic promoted by Commodore Vanderbilt himself! Having learned that he has been chosen to succeed Mr. Clark as President of the Lake Shore & Michigan Southern, it says that this is "a change which renders it much more probable that some friendly arrangement for interchange of traffic may be arrived at between that railway and the Erie line!" Meanwhile in New York men are talking of a consolidation or lease of the Lake Shore with the New York Central & Hudson River, and paying higher prices for the stock on the strength of such reports. Evidently in this country we do not understand that when the controller of a railroad is put in charge of one of its feeders, he at once makes use of his authority to give away the latter's traffic to a rival road.

#### Report of the Michigan Central Railroad Company.

The road owned by this company is simply the line from Detroit to Chicago, 284 miles. Its branches are all leased lines, though the company owns a large share of the stock of some of them. These are:

	Miles.
Jackson, Lansing & Saginaw Division, Jackson to Otsego Lake..	212
Air Line Division, Jackson to Niles.....	103
Grand River Valley Division, Jackson to Grand Rapids.....	94
South Haven Division, Kalamazoo to South Haven.....	40
Nunica Division, Niles to South Bend.....	10
Joliet Division, Lake to Joliet.....	44
Total.....	503

\* We presume this to be the 30 miles of Detroit & Milwaukee road between Grand Rapids and Nunica, and the 22 miles of the Chicago & Michigan Lake Shore between Nunica and Muskegon, on which the Central runs a few trains.

Of these, only 144 miles of the Jackson, Lansing & Saginaw Division were worked during the year, except for a very short time. All this mileage was worked the previous year also, but the Jackson, Lansing & Saginaw Division for nine months only; so that the average length worked was about 36 miles less than during the year covered by this report.

The following shows the equipment of the company: 210 locomotives, 68 12-wheel and 10 8-wheel first-class coaches, 36 12-wheel and 4 8-wheel second-class cars, 3 12-wheel postal cars, 22 12-wheel and 20 8-wheel baggage and mail cars, 92 conductors' way cars, 169 large and 141 small stock cars, 193 double-deck

cars, 1,847 merchandise cars, 475 Blue Line cars, 21 refrigerator cars, 1,338 platform cars, 2 derrick cars and 2 pile driver cars. This is a total of 4,280 cars, 118 being for passengers, 45 for freight or passenger trains, 4,276 for freight trains and 4 for working trains. There were also 175 hand and 113 rubble cars. The increase in equipment during the year was 48 locomotives; 4 first-class and 16 second-class 12-wheel coaches, 3 12-wheel and 11 8-wheel baggage and mail cars, 23 conductors' way cars, 98 double-deck cars, 565 merchandise cars, 47 Blue Line cars, 523 platform cars, 2 derrick and 2 pile-driver cars of 63 hand and 30 rubble cars. Meanwhile there was a decrease, two large and one small stock car and one 8-wheel second-class coach. The passenger equipment increased one-third, and the freight equipment 40 per cent., while the motive power increased 25 per cent.

The following trial balance shows the capital account at the close of the year:

DEBTOR.	
To Construction account.....	\$24,536,880 92
Cash on hand and loaned on call.....	803,725 85
Materials on hand.....	624,024 87
Balance of account with C. F. Livermore, General Receiver.....	495,213 19
Balance of account with J. F. Joy, President.....	41,516 30
Chicago land account.....	168,293 67
Jackson land account.....	23,911 31
Jack-on, Lansing & Saginaw adv. account.....	278,610 22
Joliet & N. L. R. stock.....	165,225 00
Sundry accounts and securities.....	49,772 06
Grand River Valley R. R. Co.....	818,341 30
Michigan Air Line R. R. Co.....	2,144,315 72
Kalamazoo & South Haven R. R. Co.....	33,440 66
Michigan Air Line, construction account.....	554,531 27
Joliet & N. L. R. R., construction account.....	11,955 06
Kalamazoo & South Haven, construction account.....	71,867 01
Jackson, Lansing & Saginaw, construction account.....	443,321 40
Bonds purchased on traffic agreements.....	41,849 00
South Bend Division, construction account.....	18,111 75
South Bend Division.....	701 59
Total.....	\$31,316,607 15

CREDITOR.	
By Capital stock.....	\$18,732,204 00
Bond accounts, viz:	
8 per cent. 1st mortgage, payable October 1, 1883.....	\$556,000
8 per cent. 1st mortgage, payable October 1, 1882, S. Fund.....	668,000
8 per cent. 1st mortgage, payable October 1, 1882, S. Fund.....	1,511,000
7 per cent. Consol. mortgage, payable May 1, 1902.....	7,000,000
8 per cent. Air Line mortgage, payable January 1, 1890.....	9,735,000 00
1,900,000 00	
Bills payable.....	80,991 72
Unpaid dividends and coupons.....	49,243 12
Detroit & Bay City R. R. Co.....	16,147 40
Proceeds Jackson L. & S. R. Equipment Bonds.....	72,065 00
Income account—balance of this account.....	724,965 91
Total.....	\$31,316,607 15

The following elaborate statement of earnings and expenses on the main line and each of the branches for the year ending with May are from the report of Mr. H. E. Sargent, the General Superintendent.

#### COMPARATIVE STATEMENT OF EARNINGS AND EXPENSES OF ENTIRE LINE, INCLUDING BRANCHES.

	1872.	1873.	Increase or Decrease.	Per cent. of Increase.
<b>Earnings.</b>				
Passengers.....	\$2,114,066 44	\$2,367,181 67	+\$253,115 23	11.97
Freight.....	4,046,198 76	4,632,873 82	+586,675 06	15.00
Miscellaneous.....	281,147 36	282,062 57	+915 21	.33
Totals.....	\$6,441,412 56	\$7,302,118 06	+\$860,705 50	13.30
<b>Expenses.</b>				
Operating expenses.....	\$4,377,614 39	\$4,840,564 87	+\$462,950 48	10.57
Taxes.....	70,189 07	146,870 59	+76,681 52	108.52
Totals.....	\$4,447,803 46	\$4,986,935 46	+\$539,132 00	12.12
Ratio of expenses to earnings, including taxes.....	.70 64-100	.68 29-100	— .2 35-100	
Exclusive of taxes.....	.67 96-100	.66 29-100	— .1 67-100	

#### SEPARATE EARNINGS AND EXPENSES OF THE MAIN LINE AND BRANCHES.

	Gross Earnings.	Expenses.	Net Earnings.	Pr. cent. of expenses.
Main Line.....	\$5,876,312 07	\$3,876,243 26	\$2,000,068 81	65.96
Joliet Division.....	133,412 00	181,904 17	—48,492 17	136.35
Grand River Valley Division.....	303,791 84	130,589 68	173,202 16	43.00
South Haven Div.....	96,920 91	38,477 53	58,443 38	59.20
Air Line Division.....	121,613 69	225,116 76	—103,503 07	184.80
Nunica Division.....	31,749 16	48,328 73	—16,579 57	152.22
South Bend Div.....	19,196 69	9,871 27	9,325 42	51.41
Jackson, Lansing & Saginaw Railroad.....	718,911 70	476,404 06	242,507 64	66.27
Totals.....	\$7,302,118 06	\$4,986,935 46	\$2,315,182 60	

#### COMPARATIVE EARNINGS AND EXPENSES OF THE MAIN LINE.

	1872.	1873.	Increase or Decrease.	Pr. cent. of Inc. or Dec.
<b>Earnings.</b>				
Passengers.....	\$1,697,256 49	\$1,755,716 33	+\$58,459 84	+ 3.53
Freight.....	3,379,625 54	3,852,933 41	+473,307 87	+14.00
Miscellaneous.....	246,192 00	257,662 33	+11,470 33	+ 4.66
Totals.....	\$5,313,074 03	\$5,876,312 07	+\$563,238 04	
<b>Expenses.</b>				
Operating expenses.....	\$3,653,574 85	\$3,750,033 39	+\$96,458 54	+ 2.67
Taxes.....	65,773 82	126,309 94	+60,536 12	+ 9.30
Totals.....	\$3,719,348 67	\$3,876,343 33	+\$156,994 66	+ 4.22
Ratio of expenses to earnings, including taxes.....	.70 68-100	.66 29-100	— .4 4-100	
Exclusive of taxes.....	.68 80-100	.63 8-100	— .5 72-100	
Passenger earnings per mile.....	\$5,941 04	\$6,257 73	+\$316 69	
Freight earnings per mile.....	11,900 09	13,566 67	+1,666 58	
Miscellaneous earnings per mile.....	866 87	836 84	—30 03	
Total earnings per mile.....	\$18,708 00	\$20,661 24	+\$1,953 24	



The freight earnings during the year, as compared with the previous year, are as follows:

	1872.	1873.	Increase.
Local east.....	\$827,035 16	\$827,701 07	\$665 91
Local west.....	594,235 98	194,531 18	399 80
Through east.....	1,480,071 11	1,881,697 24	401,626 13
Through west.....	478,263 29	518,997 92	40,734 63
Totals.....	\$3,379,255 54	\$3,852,933 41	\$473,677 87

Percentage of local increase.....	0 6 100
" through increase.....	24 12 100
" through and local increase.....	14
" local to entire freight earnings.....	36 91-100
" local passenger and freight earnings to all earnings.....	38 64-100

The increase of tonnage on all freight is 14 41-100 per cent. Passenger earnings, as compared with the previous year, are as follows:

	1872.	1873.	Increase.
Local east.....	\$114,681 16	\$492,122 17	\$17,441 01
Local west.....	401,966 09	416,138 89	14,172 80
Through east.....	398,235 81	446,304 56	47,067 75
Through west.....	417,106 27	436,409 72	19,303 45
Emigrants.....	55,246 16	55,740 91	494 75
Totals.....	\$1,687,256 49	\$1,785,716 33	\$98,459 84

Percentage of local increase.....	3 87-100
" through increase.....	9 14-100
" emigrant increase.....	0 86-100
" local to entire passenger earnings.....	47 50-100

The following are selections from the report of the President, James F. Joy:

All who read the annual report of the two last years were made aware of the necessity of very large expenditures for improvements, in order to put the road and its appointments in a condition to meet the demands of business pressing upon it. These improvements have been going on during the year, and are still in progress. There have been graded for double track 8 1/4 miles: From Detroit to Ypsilanti, on the eastern section of the road, in addition to work before done, 2 3/4 miles; from Niles to Lake, on the western division, 5 1/4 miles. It was the purpose to have laid the track the whole distance during the year, but the wear of iron on the main track was so rapid, and it was so inexpedient to relay it with the iron rail, that more of the steel rail was absorbed there than had been anticipated.

The result has been that only 44 miles of the double track has been laid, while 97 miles of the main track have been relaid with steel, making in all, of the track laid with steel rail during the year, 141 miles.

There are now, in all, 192 miles of steel rail in the main line, exclusive of the double track, which is beginning, as is seen, to have a very sensible effect upon the expense of working the road. As stated in the report of last year, it is believed that with a completed steel track this expense may be reduced to 60 per cent. of the earnings.

The cost of the double track, including rails and the grading of the 8 1/4 miles, bridging, ballasting, etc., has been..... \$988,254 11

The cost of single track, including steel rails..... 1,166,153 60

There have been laid of side tracks, 28 1/4 miles, at a cost of..... \$2,154,437 71

Side tracks at Chicago in the yards..... 814,081 72

At Jackson and Michigan City in engine-house, machine-shop and passenger-house..... 8,339 16

..... 19,040 00

..... \$2,495,985 59

At Jackson, where so many divisions of the road center, the machine-shops have been completed, and are now just put into use. Also a round-house with 52 stalls, the whole on a scale adequate to the present and probable future demands of the road. A new passenger house has been built there, suitable to the wants at that place. A new passenger house at Buchanan. A new engine-house at Michigan City, with 22 stalls. At Chicago, a freight and office building, 50 ft. by 106, a three-story high. All these buildings are first-class, of stone or brick, with slate roofs. At Chicago, also, a freight-house has been built, of a more temporary character. A new brick, 80 ft. by 496. A costing during the year..... \$326,124 06

Coal sheds and stables have been erected at Jackson, Michigan City and Lawton, made necessary by the large substitution of coal instead of wood for fuel. And water-tanks and works for the additional supply of water at various points, have been provided, at a cost of..... 29,545 39

On the Grand River Valley Division, a passenger and grain and freight house at..... \$10,806 40

At Grand Rapids on station grounds, there have been expended..... 5,450 32

The necessity for enlarging the station grounds at Chicago has compelled the purchase of additional lands there, and of leasing still more at an annual rent. Lands purchased at..... 60,108 58

At Detroit, also there has been added to station grounds, land costing..... 106,236 00

Lands have also been bought at the Junction three miles from Detroit for the erection of car-shops and round-house. The lands purchased comprise nearly 100 acres and have cost, during the year..... 22,922 39

The construction of shops for repairing cars is now in progress upon these grounds, and by the close of this season it is hoped they may be in readiness, and all shops removed from the station grounds, which are needed for station purposes.

In the operating department the power of the road has been increased by 48 locomotives, at a cost of..... 700,000 00

Four first-class passenger coaches, with twelve wheels; 10 of same description with eight wheels; 16 second-class; 2 baggage cars; 25 accommodation cars and 1,335 cars of all kinds for freight purposes have been added to the rolling stock. Of these, 612 were box cars, 62 were platform cars, 62 were box me-handies, and 62 were platform cars. The aggregate cost has been..... 1,351,292 04

On the works at the Junction, viz.: car shops and round-house, and on the foundation of a new grain-house at Detroit, there have been expended..... 51,743 46

These are the main items of expenditure for construction during the year, and amount to..... 5,066,133 25

[The President says it may not be necessary to complete at once the second track throughout; that, counting the air-line, there are 145 miles with two tracks now and 23 miles ready for the rails, well placed and with ample sidings, which is thought sufficient for the present traffic. There are 141 miles of sidings on the line, 46 of which has been laid within two years. About 400 additional box-cars are needed to save paying for the use of baggage cars, and an increase in passenger stock is needed. The entire renewal of the main line with steel is needed, and these and some other needed improvements will require a considerable expenditure over capital account this year.]

Allusion has been made in the reports of this company for

two or three years past to the rapid construction of railroads which might affect its local traffic by competition at its local points.

The effect of intense competition for through business is probably understood by all stockholders. At Kalamazoo the road is crossed by a branch of the Pennsylvania system of roads, running far north into the State. Also by a branch of the Lake Shore & Michigan Southern to Grand Rapids. At Battle Creek it is intersected by the Peninsula road connecting with the Pittsburgh & Fort Wayne, and also with the Detroit, Lansing & Lake Michigan at Lansing. At Albion and at Jackson it is intersected or reached by two other branches of the Lake Shore & Michigan Southern road. At Wayne it is crossed by the Flint & Pere Marquette. At all the important points on the main line, and at several points on the other division lines, full competition is established, and substantially the rates at all local points are as fully fixed by competition as are the through rates. The result has been everywhere a reduction of rates, and for the information of stockholders we place before them the earnings from freight, both local and through, for the years running from 1865 to 1873, inclusive of both years, stating the number of tons carried in each year, and the number of tons carried one mile in each year, and the gross earnings therefrom, and the rate of freight per ton per mile which has ruled each year:

	Tons of Freight Moved.	Tons Moved One Mile.	Freight Earnings.	Earnings per Ton per Mile.
1865.....	495,275	72,977,319	\$2,233,589 47	3 6-100
1866.....	538,451	84,897,713	2,308,591 82	3 60-100
1867.....	573,177	91,950,418	2,385,521 69	2 49-100
1868.....	638,598	101,264,251	2,480,974 16	2 45-100
1869.....	802,335	131,827,774	2,755,200 48	2 9-100
1870.....	803,770	132,903,174	2,684,438 87	1 98-100
1871.....	1,105,875	190,606,687	3,072,557 58	1 61-100
1872.....	1,238,313	216,739,737	3,379,625 54	1 56-100
1873.....	1,416,792	246,078,512	3,852,933 41	1 57-100

It will be noticed how gradually, but certainly, rates have been sinking from 3 6-100 per ton per mile in 1865 to 1 56-100 in 1872, with slight increase in 1873. It follows that we are doing all freight business, including local as well as through, on an average, at very nearly half what the rates were eight years ago. To illustrate the effect of this take the year 1868 as an example. This is only five years ago, and then the rates had declined from 3 6-100 per ton per mile in 1865 to 2 45-100 in that year.

The gross earnings from freight in that year were \$2,480,974. In that year the surplus to be divided among stockholders after paying expenses and interest was \$944,328. Now, had the company been compelled to do that business that year at the rates of last year, viz.: 1 56-100 per ton per mile, the gross receipts from freight would have been \$1,579,722, instead of \$2,480,974, and the difference would have been \$901,251, which is very nearly the total surplus of that year credited to income account. If we had also been compelled to do the through passenger business of that year at present rates, which is about four-fifths of the then rate, there would have been a deficit in earnings even to pay interest on the then debt of the company.

At that time the road was tasked to its full capacity to do its business. It had not increased its power for ten years, and its rolling stock but little. The through freight line had just been organized. The next year both power and cars were inadequate to the business, and the value of it could not be increased, with the road and its appointments maintained only up to their then standard. The result would have been an annual deficit for the last two or three years, but increasing with each year, and the company would have been bankrupt.

Now reverse the case and take the business of 1872. The freight earnings of that year were \$3,379,625, with the rate per ton per mile of 1 56-100. Had we been able to realize the sum of 2 45-100 per ton per mile, the rate of 1868, the earnings from that business would have been \$5,310,123, or \$1,930,497 more than was realized at present rates.

On the business of the present year, which is a large increase over that of last year, the difference is still more striking. In the last year the gross earnings from freight were \$3,852,933.41. The rate per ton per mile was 1 57-100. At the same rate as in 1868 the earnings would have been \$6,028,923.54, which is \$2,175,990.13 more than was actually realized. That amount has been saved to the producer in a single year by the competition which has sprung up only within the last five years. The only comfort there is in it to railway managers, is in the fact that the rate per mile is not reduced during the last year, indicating that competition for the present has done its worst. In fact it is difficult to conceive that business can be done cheaper with any reasonably adequate profit to the railroad companies.

The corollary to be drawn from all this is as clear and certain as it can possibly be, that to have remained stationary for the past five years would have been equivalent to bankruptcy, and that within the period of eight years past, to enable the road to earn even as much as it did five years ago, it must do very much more than double the business, because rates are only half as much as in 1865. But to earn only that would not avail, because to put the road in a condition to do double the business, all its capacity of power, rolling-stock, tracks and station-grounds must be enlarged up to the point which will enable the road to do double the business, and even then we should be earning no more money than we were in 1865. The earnings, therefore, must be so much more than double as will pay the increased cost of operation and the interest on the additional capital required to bring the road and all its appointments up to that degree of ability which shall enable it to do certainly three or four, or more, times the business of 1865. Much, however, it should be said in this account, may be credited to the increased economy in the management of no large business over a perfect and ample track of steel rail, ample station grounds, convenient and adequate repair shops, both for locomotives and cars.

There remains no doubt, however, that all that has yet been done in bringing the road up to the necessities of the case, and preparing it for the increased volume of business which must pass over it, is even yet inadequate. Very much the largest share of the evident and imperative necessities have been accomplished, and to some extent the benefits have begun to be realized in the augmented business. It will require much less, however, to double the present volume than it has needed to reach it, and it does not result of a doubt that the path of safety is to aim at that result and be prepared for it. The present low rates will never be higher, and there is this compensation in them, viz.: that they will and will continue to turn a world of business over the railroads, and those which shall be able to take it, and handle it with economy, may be, and probably will yet be, as prosperous in the future as in the past.

But it is clear that to accomplish this involves double and perfect track, and more than double power and equipment, and all else in proportion. Though it has not all been accomplished in the past two or three years on the Michigan Central, a very long step has been taken toward it. Both power and rolling-stock have been much more than doubled; the capacity of the track has been more than in proportion increased, and the business in the last five years much more than doubled, and in the last eight trebled. The increased earnings during the year on the same extent of road have been, as above stated, \$860,705.50.

This result, however, is by no means adequate to the necessities of the case, and the increase might as well have been nearly double as to have been what it was, but for causes which have been alluded to in former reports, but now more fully

stated. While this company has observed the tendency of rates, and appreciated the imperative necessity of enlarging the capacity of the road for the necessary increase in the volume of business required to maintain and augment its revenues, it has had no ability to control the connecting road east of it, and over which all our through business, so far as it could move at all, must pass. We allude to the Great Western road of Canada. It will be impossible to make our stockholders appreciate or know the efforts made by the officers of this company to induce the managers of that road in time to take such action as would enable it to receive and carry forward easily the business we should deliver to it. Certainly no means in our power have been unused. All efforts in the past have, until recently, been unavailing, and yet it is not too much to say that, during the whole of the past year, it has been clogged up with business. With the exception of work upon its loop line it has done almost nothing. While its clear duty was to provide ample sidings for the passage of trains everywhere, it has been choked at almost every point. While its power and rolling stock should have been not only ample to move rapidly the through business which we gave it, but also the business of Michigan and the other roads centering at Detroit, it has been worked with half the number of locomotives and a thousand less cars than have been found insufficient upon your road. It undertakes to do the ferry business at Detroit, but the means have been wholly inadequate, even before the winter set in. During several months, the cars could not be taken across as rapidly as was requisite, and for that period, all the time, large numbers of loaded cars, often as many as from 700 to 1,000, were waiting in our yards to be moved across. When winter came on—and it was the most severe by far ever known at Detroit—the difficulty was still greater, though could the freight have crossed it could not have been got over that road. For about three months, when business pressed most, this company was compelled to refuse freight from its western terminus to go through, and for two-thirds of that time there were from two thousand to three thousand cars waiting the passage of the river, and when they finally passed, it was near a month before they could be got back to commence earning money upon your road. The result was to our business both unavoidable and disastrous, as it was also equally to the Great Western.

The company probably lost during the winter, from this cause alone, business amounting to about half a million of dollars, and that company nearly as much; and each company during the whole year has, including the winter loss, suffered very largely more than that, from the inability of the Great Western to meet the demands upon it and carry the business of its road without delay, while the cost of doing it has also been to both companies very greatly enhanced.

[Explanation is made why the Great Western, owned chiefly in England, where the pressing growth of traffic is not fully understood or appreciated, has been slow to make the needed improvements, and it is said that the company is beginning to make them, and a statement of the contracts let for second track and additions to rolling stock, at an estimated cost of \$5,216,000, is made. The completion of the International Bridge is mentioned as securing an unbroken winter outlet to Buffalo by way of the Grand Trunk, whose ferry at Sarnia is never obstructed by ice, and the probable completion of the Canada Southern to Detroit is mentioned as another possible outlet.]

This company now operates as branches, under leases, the following roads:

The Kalamazoo & South Haven.....	40 miles.
The Jackson, Lansing & Saginaw, just now open to Otsego Lake, and to within 5 miles of the Straits.....	212 "
The Grand river Valley road.....	94 "
The Niles & South Bend.....	10 "

The rent paid for the Kalamazoo & South Haven road is the interest on its bonds only. For the Grand River Valley road it pays, by way of rent, the interest on its bonds and 5 per cent. on its stock, \$492,000. For the Jackson, Lansing & Saginaw it pays by way of rent the interest on its bonds, and after this year \$70,000, of which, however, some more than a third belongs to this company, which holds rather more than a third of all the capital stock of that company.

That company has a land grant of 600,000 acres, largely pine-land given it to help construct the road. Of this, some more than a third is the property of the company in virtue of the stock so held by it. It is difficult to say what this land is worth, but it is safe to say it is of great value.

These roads are all tributary to the main line of the company.

Their gross earnings for the last year were.....	\$1,138,821 14
The amount of business they furnish the main line is.....	387,517 59
The amount of the gross business of these roads and the earnings upon the main line upon the business furnished by them is.....	\$1,526,338 73

Or about 21.33 per cent. of the whole business of the company.

[The Jackson, Lansing & Saginaw with its extension to the Straits of Mackinac and the probable construction of a railroad from Mackinac to Marquette are mentioned as making the new Detroit & Bay City Railroad valuable to the interests of the Michigan Central, which has secured two-thirds of the stock of that company, and in return for placing its bonds \$274,000 of which only it guaranteed. The Michigan Central works the road with its own rolling stock, and has entire control of it. It is expected that the road will earn enough to pay the interest on its bonded debt presently and soon enough to pay for the use of rolling stock, and when connection shall be made with Marquette it is believed that it will become a valuable property. The abandonment of the scheme of tunneling the Detroit River is mentioned, as consequent on the unpromising developments of the unfinished drainage tunnel, and it is hoped that a commission of engineers appointed by resolution of the last Congress will report in favor of authorizing a bridge, which can be constructed within a year.]

In concluding this report the board may remark that the last few years have made a great revolution in the business of railroads in this country. Continuous lines have become practically one road. All through business is done in through or line cars. The grain of the country is now moved half the year mainly by rail, and largely at all times. That business is without limit, and is far beyond the ability of all railroads now built or likely to be built. It must be done at low rates, but present rates command it. With ample power and rolling stock, perfect and permanent double steel track, there seems to be, in the judgment of the board, no good reason why the increasing volume of business may not much more than make up for the decreased rates. The revolution has been so sudden, and great also, that the difficulty has been to prepare the roads for it, and enable them to meet the emergency. No effort to accomplish this for the road of this company has been spared by the board, and on the whole, though there have been, and still are, great difficulties in bringing all parts of the line between Chicago and the Bridge up to the requirements of the business of the country, yet upon the whole the effort is about to be successful, and there is no good reason why in the future the road may not be as prosperous as in the past.



## Report of the Milwaukee &amp; St. Paul Railway.

The report for the year 1872 shows that this company at the close of the year owned the following lines of railroad:

	Miles.
Milwaukee to St. Paul, via Prairie du Chien.....	405
Milwaukee to La Crosse, via Watertown.....	196
Milwaukee to Portage City, via Horicon.....	95
Horicon to Berlin and Winneconne.....	58
Watertown to Madison.....	37
Milton to Monroe.....	42
Calmar to Algona.....	126
Conover to Decorah.....	10
Austin to Mason City.....	9
Mendota to Minneapolis.....	130
*La Crosse to St. Paul.....	40
Hastings to Glencoe.....	75
Sabula to Marion.....	87

Total miles owned by the company.....1,310

\* Twenty-seven miles of it not worked until 1873.

Since the expiration of the year it has acquired the new line from Chicago to Milwaukee, 85 miles, making a total length now owned and worked of 1,395 miles.

It works, and did in 1872, the Oshkosh & Mississippi Railway, from Oshkosh to Ripon, 20 miles, for 65 per cent. of its receipts.

The company owns also \$2,001,000 of the stock—a majority—of the Western Union Railroad Company.

These lines with their equipment were represented at the close of the year by the following bonds and shares:

Mortgage bonds.....	\$3,965,530 00
Preferred stock.....	10,825,777 00
Common stock.....	13,398,554 00

Leas cost of Western Union.....\$48,189 83 10

Cost of 1,283 miles.....\$46,687,081 00

or, say \$36,390 per mile.

The comparative earnings, expenses and general condition of the company are given as follows in the directors' report:

	1871.	1872.	Increase.
Gross earnings.....	\$6,690,696	\$6,957,771	\$267,075
Working expenses.....	3,850,355	4,695,616	\$845,261
Net earnings.....	2,840,341	2,262,155	Dec. 578,186
Interest on bonds.....	1,317,735	1,435,860	Inc. 118,125
Miles of road.....	1,018	1,283	265
Amount of bonds and stock.....	39,278,965	46,687,081	7,410,116
Bonds and stock per mile.....	38,590	36,390	Dec. 2,199
Tons of freight moved.....	1,463,156	1,697,826	234,670
Number passengers carried.....	849,681	936,173	86,492
*Train mileage.....	3,319,434	3,783,801	464,366
Expense per train mile.....	\$1.16	\$1.24	8 cents
Receipts per mile of road.....	\$6.573	\$5.535	Dec. \$1.037
Value of supplies, Dec. 31.....	300,213	410,611	110,398

\* Excluding working trains.

With an increase of \$267,075 in gross receipts there has been a decrease of \$578,186 in net earnings, which is said to be chiefly owing to competition and low rates in the summer of 1872. The average receipts per ton per mile for eight years have been:

	Cents.	For 1869.....	Cents.
For 1865.....	3.76	For 1869.....	3.10
" 1866.....	3.76	" 1870.....	2.82
" 1867.....	3.94	" 1871.....	2.54
" 1868.....	3.49	" 1872.....	2.43

During the year the directors, by the authority of the stockholders, purchased the following roads:

The Hastings & Dakota, from Hastings to Glencoe, in Minnesota, 75 miles.

The Sabula, Ackley & Dakota Railroad, extending from Sabula to Marion, Iowa, 87 miles. This road connects by a ferry with the Western Union Railroad at Savanna, and

The St. Paul & Chicago Railway, from La Crosse to St. Paul, 130 miles.

For the purchase of these roads, on all of which there was an equipment in rolling stock equal in value to \$3,000 per mile, the bonded debt of the company and common stock have been increased as follows:

For the purchase of the Sabula, Ackley & Dakota Railroad \$1,485,000 of bonds, and \$825,000 of common stock.

For the purchase of the Hastings & Dakota Railroad, \$1,350,000 of bonds, and \$750,000 of common stock.

For the purchase of the St. Paul & Chicago Railway \$4,000,000 of bonds; of this amount \$3,000,000 were issued in 1872, and \$1,000,000 in 1873, which last issue does not appear in the general account for the year 1872.

The company have paid two semi-annual dividends of 3 1/2 per cent. each, on the preferred stock of the company, out of the earnings of 1872, in cash. No dividends have been declared or paid on the common stock.

Any consideration of the more detailed statements in the General Manager's report we are compelled to defer.

## Report of the Flint &amp; Pere Marquette Railroad.

This company, which as now organized was formed by the consolidation of the Flint & Pere Marquette, Bay City & East Saginaw, Holly, Wayne & Monroe, Flint River and Cass River companies, owns a line from Monroe, Mich., northward to East Saginaw, and thence westward to Reed City, 205 miles long, with a branch from East Saginaw to Bay City, 13 miles, and from a point near Flint to Otter Lake, 14 1/2 miles, a total of 232 1/2 miles. An extension of the main line from Reed City to Ludington, 48 miles, is under construction, as is also the Cass River Branch from East Saginaw to Vassar. The Flint River Branch was completed August 31, making the average mileage for the year 223 miles.

The operations for the year 1872 were as follows:

Earnings from:	
Passengers.....	\$452,643 02
Freight.....	600,116 37
Mails.....	13,264 83
Other sources.....	67,588 26
Total (\$5.083 per mile).....	\$1,133,612 37
Operating expenses (59 1/2 per cent.).....	678,494 00
Net earnings (\$2.041 per mile).....	\$455,118 37

As compared with the previous year, there is an increase of \$458,926.68, or 63 per cent. in gross earnings, and an increase of \$183,244.36, or 67 1/2 per cent. in net earnings. During the year, 509,975 passengers and 344,559 tons of freight were carried. A large part of the traffic was in lumber, the stations west of Saginaw alone having sent over the road 26,607,000 feet of lumber and 90,220,000 shingles.

In addition to the earnings of the road \$1,743,000 was received from the sale of bonds, of which about \$1,200,000 was expended for new construction and equipment.

During the year the Flint River Branch was built to Otter Lake, 14 1/2 miles from the junction with the main line, between Flint and Mt. Morris. The grading of the remaining portion of the main line between Reed City and Ludington, 48 miles, was ordered May 1, 1872, and the entire line will be ready for iron in July. Of the Cass River Branch 20 miles (between the

main line near East Saginaw and Vassar) are under construction and about half completed.

A building for the Land Department and general offices of the company is now in the course of erection in East Saginaw, to be ready for occupation early in the coming autumn. Aid was extended to the East Saginaw & St. Clair Railroad Company, by which that railroad was constructed late in 1872, from the intersection of the main line, three miles east of East Saginaw, to South Saginaw, 260-100 miles. Surveys of the whole line of the East Saginaw & St. Clair Railroad have been made both to Port Huron and St. Clair, but at date of the report no progress had been made with construction. That line, as far as Vassar, will be identical with the Cass River Branch.

## General Railroad News.

## ELECTIONS AND APPOINTMENTS.

—Mr. H. D. Chapin has been appointed Superintendent of the Middle Division of the Chesapeake & Ohio Railroad, with headquarters at Staunton, Va.

—At the annual meeting of the Northern Colonization Railway Company of Canada, July 10, Sir Hugh Allan, Louis Beaubien, Jean B. Beaudry, Henry Mulholland, J. J. C. Abbott, P. S. Murphy and James McLaren were chosen directors. Sir Hugh Allan was chosen President; Louis Beaubien, Vice-President; M. De Bellefeuille, Secretary and Treasurer; and P. S. Murphy, Managing Director.

—At the annual meeting of the Gilman, Clinton & Springfield Railroad Company, in Springfield, Ill., July 10, the following directors were chosen: John A. Chestnut, J. T. Stuart, John Williams, George N. Black, S. H. Melvin, Springfield, Ill.; C. H. Moore, William Fuller, Clinton, Ill.; Elias Wenger, Gilman, Ill.; S. Linn Bridler, Mount Pulaski, Ill.; A. S. Guthrie, Gibson, Ill.; A. H. Marquis, Bellflower, Ill. The only new director is Mr. Marquis, who takes the place of D. A. Rosecrans. The board re-elected the old officers, as follows: President, S. H. Melvin; Vice-President, William Fuller; Treasurer, George N. Black; Secretary, J. W. Lane.

—Governor Dix, of New York, has appointed Rudolph Witthaus, Abram Duryea, Edward R. Bell, J. F. De Navarro and General C. A. Gilmore Commissioners to locate the line of the Gilbert Elevated Railway in New York city, under the act of the last Legislature.

—Mr. Charles Hamilton, late of Rock Island, Ill., has been appointed Superintendent of the Northern Division of the Cairo & St. Louis (narrow-gauge) road, with headquarters in St. Louis.

—At the annual meeting of the Grand Rapids & Indiana Railroad Company, in Grand Rapids, Mich., July 16, the following directors were elected: Mancel Talcott, Chicago; George A. Mitchell, Grand Rapids, Mich.; Andrew Ellison, Lagrange, Ind.; F. P. Randall, Piny Hoagland, Fort Wayne, Ind.; H. J. Jewett, Columbus, O.; J. N. McCullough, Wm. Thaw, Thomas D. Messler, Pittsburgh, Pa.; Thomas A. Scott, George B. Roberts, H. H. Houston, Philadelphia; Robert B. Potter, New York. Messrs. Mitchell, Jewett, Messler, Scott, Roberts, Houston and Potter are new directors. The board re-elected W. R. Shelby Secretary and Treasurer, but postponed the choice of President.

—Mr. C. S. Jones, for many years manager of the Western Union Telegraph office in Albany, N. Y., has been appointed Superintendent of the Illinois Central telegraph lines in Illinois, and agent in charge of repairs.

—James F. Joy, of Detroit, was chosen President of the Sheboygan & Fond du Lac Railroad Company, July 16, in place of J. A. Bently, resigned.

—M. Stanton, formerly Assistant Superintendent of the Selma, Rome & Dalton Railroad, has been made Superintendent of the South & North Alabama Division of the Louisville & Nashville Railroad, with office at Birmingham, Ala.

—We understand that Mr. J. Edgar Thomson has been chosen President of the company which proposes to construct a bridge over the Hudson at Poughkeepsie, that Mr. J. H. Linville is made Chief Engineer and Mr. Wilson Crosby Principal Assistant, and also in charge of the location of about 17 miles of railroad to connect with the bridge.

—Mr. E. J. Hardey has been appointed Superintendent of the Union Telegraph office in Albany, N. Y., in place of C. B. Robinson, appointed General Superintendent of the Indianapolis, Peru & Chicago Railroad.

—At a meeting of the stockholders of the National Railway Publishing Company (publishers of the Official Guide) in Philadelphia, July 17, John N. Abbott, Joseph W. Allen, Edmund Allen, Ellis Clark, James Charlton, George A. Dadmun, Charles E. Follett, Henry W. Gwinner, Stephen Greene, J. Warren Gore, William P. Johnson, S. F. Pierson and N. Van Horn were elected directors for the ensuing year. The board subsequently elected officers as follows: President, Henry W. Gwinner; Secretary and Treasurer, Edmund Allen; Editor and Business Manager, William F. Allen.

—The first board of directors of the consolidated Chicago & Atlantic Railway Company is as follows: George J. Bippus, David Stadelaker, John Stadelaker, Samuel M. Daily, Joseph W. Purvance, John Kenner, Isaac B. Hyman, Gustavus A. Durr, William Elmdorf, John G. Earle, Isaac P. Coats, George A. Shufelt, and J. C. Fawcett.

—Major Louis F. Booth, a graduate of the University of Michigan of the class of 1860, for a time an employee in the Land Department of the Illinois Central Railroad, during the war a captain and afterward a major of the Ninth Illinois Cavalry, and for several years past Paymaster of the Chicago & Northwestern Railway, has been appointed General Eastern Agent of the last named company, with headquarters in New York.

## PERSONAL.

—Robert S. Fowler, Superintendent of Telegraph of the Iowa Division of the Illinois Central Railroad, and of the Dubuque Southwestern, died at his residence in Dubuque on the 21st, of hemorrhage of the stomach.

## CHICAGO RAILROAD NEWS.

## Chicago, Danville &amp; Vincennes.

This company is rapidly developing a large freight business. It has now something over 970 gondola cars alone, which are almost exclusively used in the transportation of coal. On Saturday last the company brought to Chicago 127 car-loads of coal, and the average receipts per day are now about 90 car-loads. By the 1st of September the company expects to be able to deliver 150 car-loads per day, and there is apparently no limit to the demand for the coal in this city. It is readily disposed of as fast as it is received. About 40 car-loads per day are now received from the Indianapolis Division of the road, and before the year closes this promises to develop to a business of some 100 car-loads per day. The company now has 24 engines, and 10 more in process of construction, which they will receive during the next three months. A new elevator, built for the company on

the South Branch of the river, near the point where it is resolved into its two affluents, or at the head of the Illinois & Michigan Canal, has just been completed, and was occupied about two weeks ago. Its present capacity is 350,000 bushels, and the company is making arrangements to increase its capacity to 700,000 bushels within a few months. This is a great convenience to the company, and will enable it to manage its large grain business much more easily than hitherto.

The company is now getting the machinery into the new shops in Danville, and is building the passenger house. The new freight house, which has been enlarged to a size of 90x40 feet, is nearly completed. It is a fine, fire-proof building.

## Chicago &amp; Pacific.

This company has been delayed in getting into Elgin by an injunction against the company's using a portion of the Chicago & Northwestern right of way to get into the city. Unless the injunction is removed, the company will be obliged to seek some other and more difficult line of approach than the very natural and easy one of the Chicago & Northwestern along the side of the high ridges that distinguish Elgin from most other places in the State.

## Michigan Central.

A general order has been issued to the effect that no passengers (except drivers accompanying their stock and employees of the road on business) will be allowed to ride on any freight trains except those designated as way freight trains. No passenger will be allowed on any way freight unless provided with a ticket before getting on the train.

## Chicago, Burlington &amp; Quincy.

Work has already been commenced by the contractor on the new car shops at Aurora, Ill., to replace those recently burned down. The principal buildings will be a paint shop, 80 by 310 feet, and a general car shop also 80 by 310. These two buildings will stand at right angles to the main track and will have between them a space of 100 feet, which will be occupied by a transfer table. In each building there will be 14 tracks. North of these will be two other buildings—a blacksmith shop 90 by 200 feet and a general machine shop 80 by 310—these latter buildings being parallel to the main track. The engine house will be a separate building, adjoining the general machine shop. The shops are to be solidly built and made as nearly fire-proof as possible.

## Chicago, Rock Island &amp; Pacific.

A suit to recover money held by B. F. Allen as Receiver of the old Mississippi & Missouri road was decided recently at Davenport, Ia. When this road passed into the hands of the Rock Island & Pacific Company, the latter assumed all liabilities. In the adjustment of these liabilities the bondholders were settled with, but under the plea that the Mississippi & Missouri Company had guaranteed certain bonds issued by Davenport, Muscatine and Iowa City, and the counties of Scott, Muscatine, Johnson, Washington, and other counties on the line, to the principal amount of \$400,000, and as all the said cities and counties defaulted on the payment of interest on said bonds, the Chicago, Rock Island & Pacific Company, as a matter of self-protection, obtained an order of court to the effect that \$75,000 purchase money due stockholders of the Mississippi & Missouri Company should be placed in the hands of B. F. Allen, of Des Moines, as trustee, in case the company or its assigns should ever be obliged to make good its bonds of said cities and counties. As soon as this order was obtained, the holders of said city and county bonds commenced suit against the bonds thus held in trust. This was the state of affairs when the Legislature of Iowa, in 1868, passed the act enabling cities and counties to adjust their indebtedness. The city of Davenport, which held \$75,000 of stock in the old company, having adjusted its debt under the law, at once commenced suit to recover its proportion, as a stockholder, of the money in the hands of the Receiver. The court has just decided in favor of the city, which will now receive 16 per cent. of the par value of its stock. Similar suits have been brought by the other towns and counties interested.

## Chicago &amp; Alton.

A new elevator with a capacity for 1,500,000 bushels of grain is to be built for this road on the South Branch of the Chicago River, about four miles from the Chicago passenger station.

## Chicago &amp; Paduach.

This company's bonds, to the amount of \$576,000, of an issue limited to \$18,000, were advertised in London in papers of the 12th. It was announced that the road from Streator to Flora will be 200 miles long, 97 of which is in operation, and 32 nearly completed; and that the remaining section of 71 miles will be begun immediately and completed by May next. The bonds bear 7 per cent. interest in gold, and are to be redeemed in 1902. The price of issue was 68 per cent.

## THE SCRAP HEAP.

## Railroad Manufactures.

Ferris & Miles have added to their works for manufacturing machine tools an extension 140 by 60 feet, clear span, with a 20-ton power crane, new tools including a 6-foot square planer to plane 16 feet long. Also a new boiler-house and machine-shop wing 70 by 20 feet filled with smaller tools. They are now able to put up a machine 30 feet high.

On the morning of the 21st, in the foundry of the Industrial Works of Wm. B. Bement & Sons, the well-known builders of machine tools, a fire broke out which damaged badly the interior of the foundry, nearly destroyed the roof, burned a number of core boxes and patterns for large castings. The loss is reported at \$15,000.

A company with a capital of \$500,000 has been organized at Springfield, Ill., by the name of the Siemens Steel Works, for the manufacture of steel. The works are to be erected about two miles south of the city at the crossing of the Toledo, Wabash & Western and Chicago & Alton railroads.

The Union Foundry and Machine Company, at Catawaugus Pa., have contracted to furnish 450 tons of car castings to a party in New York.

The Rhode Island Locomotive Works, at Providence, R. I., now employ about 900 men and turn out 12 engines per month. Orders for over 100 engines are now on hand.

The new rolling mills at St. Albans, Vt., turned out the first rail recently. About 100 men are now employed, but the number will soon be increased.

## Government Boiler Tests.

At the trials of steam boilers at Sandy Hook next fall the experimenters will be provided with bomb proofs, so that observations may be taken almost instantly after an explosion. It is hoped to establish by these experiments the comparative value of iron and steel boiler plates, of different plans of fastening plates, the efficiency of special plans for preventing explosions, and of registering apparatus, &c.

## Perils of the Rail.

A telegram from Lafayette, Ind., relates that on an east-bound train on the Toledo, Wabash & Western road, June 17, a passenger shot a brakeman through the neck, and excused himself by saying that he aimed at the conductor, who was trying to put him off the train. He was transferred to a jail at the next station.



## TRAFFIC AND EARNINGS.

—The earnings of the Chicago & Northwestern Railway for the second week in July were: 1873, \$286,095; 1872, \$243,079; increase, \$43,016, or 17½ per cent.

—During the month of June 1,378 loaded freight cars passed westward over the Union Pacific bridge across the Missouri at Omaha. Of this number, the Chicago, Rock Island & Pacific furnished 489 cars; the Burlington & Missouri River road, 373; the Chicago & Northwestern, 356; the Kansas City, St. Joseph & Council Bluffs, 160.

—The earnings of the Michigan Central Railroad for the month of June were: 1873, \$608,955; 1872, \$505,314; increase, \$103,641, or 20½ per cent.

—The earnings of the Great Western Railway of Canada for the week ending June 27 were: 1873, \$22,950; 1872, \$20,768; increase, \$2,182, or 10½ per cent.

—The earnings of the Grand Trunk Railway of Canada for the week ending June 28 were: 1873, \$37,300; 1872, \$34,900; increase, \$2,400, or 6½ per cent.

—The earnings of the Milwaukee & St. Paul Railway for the second week in June were: 1873, \$187,450; 1872, \$108,166; increase, \$79,284, or 73½ per cent.

—The earnings of the Kansas Pacific Railway for the first week in July were: Passengers, \$30,944.67; freight, \$34,027.00; mails, \$2,055.31; total, \$67,026.98. Of this amount, \$2,517.52 was for transportation of troops, mails and government freight.

—The earnings of the Erie Railway for the week ending July 15 were: 1873, \$438,747; 1872, \$393,791; increase, \$44,956, or 11½ per cent.

—The earnings of the Great Western Railway of Canada for the week ending July 4 were: 1873, \$24,307; 1872, \$21,473; increase, \$2,834, or 13½ per cent.

—The number of through passengers passing over the Central Pacific Railroad during the month of June was: Westward, 4,573; eastward, 2,331; total, 6,904.

—The earnings of the Grand Trunk Railway of Canada for the week ending July 5 were: 1873, \$36,300; 1872, \$33,000; increase, \$3,300, or 10 per cent.

—The earnings of the St. Louis & Southeastern Railway (consolidated) for the first week in July were: 1873, \$26,252; 1872, \$15,594; increase, \$10,658, or 68½ per cent.

## OLD AND NEW ROADS.

## Memphis &amp; Charleston.

It is said that suit is soon to be commenced before the United States Court at Huntsville, Ala., to have the lease of this road to the Southern Security Company set aside and the road put into the hands of a receiver until the validity of the lease can be decided upon. It is claimed that the lessees have not kept the road in good order, as required by the lease, but have suffered both the road and equipment to fall into decay, and that the business of the road has largely decreased, owing to bad management.

## Jacksonville, Pensacola &amp; Mobile.

This road was to have been sold under foreclosure July 7, but at that time the Attorney-General, on the part of the State, gave notice that the State has a first lien on the property, and would contest the sale. The sale was postponed until January next.

## Cartersville &amp; Van Wert.

The Atlanta (Ga.) Constitution says that the Commercial Warehouse Company of New York, which held most of the bonds, has secured a controlling interest in the stock. The company has advanced money enough to pay off the floating debt, and will at once change the road from 3-feet to 5-feet gauge and complete it.

## Cumberland &amp; Ohio.

At a recent meeting of the Executive Committee, the Chief Engineer was directed to advertise for proposals and to let the contracts for the grading and masonry of the sections from Shelbyville, Ky., to Taylorsville, 16 miles; from Lebanon, Ky., to Greensburg, 30 miles; and from Scottsville, Ky., to Gallatin, Tenn., 35 miles. Directions to push the work forward were given.

## New Bedford &amp; Fall River.

This company has accepted a proposition from a contracting firm to build the road at once. The road will be 16 miles long from New Bedford, Mass., northwest to Fall River.

## West Wisconsin.

Surveys are being made for the branch from Eau Claire, Wis., to Chippewa Falls, and the contracts for the grading will be let as soon as the line is located. The branch will be about 12 miles long.

## New York Central &amp; Hudson River.

It is stated that this company has ordered 40 new locomotives from the Schenectady Locomotive Works, to be built at once.

## Wisconsin Central.

The Ashland (Wis.) Press states that 10 miles of road are to be built on the northern end of the road this year, which will leave a gap of only 50 miles between the northern and southern ends of the line.

## New York, New Haven &amp; Hartford.

It is stated that the travel on the fast express train from New York to Boston, which was put on this spring, is very large, and that the train will have to be divided or an additional fast train run.

## Erie.

It is reported that surveys are to be made for a new line from Port Jervis eastward toward New York. It is claimed that the line can be shortened nearly 25 miles, making the distance from Port Jervis to Jersey City only 60 miles, besides avoiding the present heavy grades from Port Jervis to Otisville and the Oxford grade. The project is not a new one, having been talked of several times but abandoned, we believe, on account of the very heavy work required.

It is stated that the board of directors have not decided to make any purchase of coal lands in Pennsylvania as has been reported.

A large number of bids was received for the grading and masonry on the various sections of the second track lately advertised. The contracts had not been let at date of our latest information.

## Pacific, of Missouri.

In the United States Circuit Court at Davenport, Ia., Judge Dillon has granted a temporary injunction to restrain the Governor of Missouri from offering this road for sale to satisfy the State lien.

The decision of the Court is summed up, as follows, by Judge Dillon:

"The State was not disabled from releasing its security on receiving full value for it, and of its value it was left by the constitution to be the judge, so left because there was nothing to restrain it. I feel quite clear in the conviction that the equities of the bondholders under the plaintiffs' mortgage are superior to those of the State, and on this ground, reserving

all questions of rights as between the company and the State, and on the ground that in case of controversy as to priority of lien the priority ought to be settled before an irredeemable sale is made, I award a temporary injunction, but with leave to the defendants to move to dissolve it, before Mr. Justice Miller and myself, should be present at the September term of the court in St. Louis, or before Judge Krekel and myself at the regular term at Jefferson City. Meanwhile, the issues may be made up and proofs taken under the rules."

## Northern Pacific-Pacific Division.

The town of Tacoma has been selected as the terminus of the road on Puget Sound. The people of Seattle propose to build a branch to the main line near Tacoma.

## Dividends.

The Louisville & Nashville pays a dividend of 4 per cent. for the half-year August 1, at the Louisville office, and at that of the Farmers' Loan and Trust Company, New York. Books will be reopened August 6.

The United States Express Company pays a quarterly dividend of \$2 per share at the office of the Union Trust Company, New York, August 1.

The Terre Haute & Indianapolis paid a half-yearly dividend of 6 per cent. July 21.

## Vermont Valley.

The injunction forbidding the annual meeting, having been dissolved, a meeting was held at Bellows Falls, Vt., July 21, and elected a board of directors and other officers. It is said that the new board is in the interest of the Connecticut River Railroad Company and will at once make an effort to break the lease to the Rutland Railroad Company, through which the road is sub-leased to the Vermont Central. The legality of the meeting and the election is to be contested in the courts.

The road extends from Brattleboro, Vt., north to Bellows Falls, 24 miles.

## St. Paul &amp; Pacific-First Division.

It is reported that the Northern Pacific Company, which is said to be the sole stockholder in the above company, contests the decision of the Secretary of the Interior, by which land along about 110 miles of road was assigned to the St. Paul & Pacific, and will re-open the case. The New York Herald's Zeitung says that when the bonds of the St. Paul & Pacific First Division were placed, special attention was called to the additional value given to the security by these lands, and that by men who were and are also officers of the Northern Pacific, which is now endeavoring to secure the lands for itself.

On the 22d of June there was a meeting in Amsterdam of the holders of the bonds of this company, secured by the "St. Vincent and Brainerd Extensions," at which 124 persons, whose holdings amount to \$2,992,000, were present. A committee was chosen and empowered to take the necessary steps to protect the interests of the bondholders. The bondholders are to be consulted, should an arrangement with the company be proposed. In answer to a question proposed to a member of the firm through which these bonds were placed, it was stated that probably the American management would propose the appointment of a receiver, and the advancement of money enough to complete the unfinished section of the road this year, on security of the parts already completed.

A telegram from St. Paul dated July 11 says: "The attorneys for John Kennedy & Co., of New York, and other bondholders, to-day filed a bill of complaint against the Northern Pacific, St. Paul & Pacific, First Division of the St. Paul & Pacific, and the mortgage trustees of the last-named road. Judge Dillon orders the defendants to show cause at Davenport, July 29. The complaint and accompanying affidavits set forth that the two last-named companies are unable to pay their debts; that they are owned by the directors of the Northern Pacific, and managed solely in the interest of that company, to the injury of its creditors; that the finances and business of the First Division have been mismanaged; that the money advanced for the building of extensions from Watab to Brainerd and St. Cloud to St. Vincent was misappropriated to other uses; that the bondholders' security is upon lands appertaining to extensions, the grant of which expires December 3 next, when the lands will revert to the benefit of the Northern Pacific, on which account the building of the extension was stopped by the Northern Pacific agents controlling the St. Paul & Pacific companies. Plaintiffs ask the appointment of a receiver, and the expenditure of the money they will advance under the direction of the Court to complete the extension lines. Colonel Crooks testifies that DeGraff & Co. can finish the roads in time to save the grant in connection with certain lands from the St. Paul & Pacific grant, since patented to the Northern Pacific. Serious charges are made against George L. Becker, President, and William G. Morehead, Construction Agent of the First Division Company. The complaint and affidavits as a whole allege, with many details, a plot to forfeit the St. Paul & Pacific grants for 370 miles of road, whereby the Holland bondholders would lose all security, and the Northern Pacific get most of the best lands under its own grant."

## Philadelphia &amp; Erie.

The grading for the second track from Driftwood (eastern terminus of the Bennett's Branch Extension of the Allegheny Valley Railroad) to North Point (3 miles east of Renovo) is about finished, ballasted with broken stone from 12 to 20 inches deep, and ready for the iron. The grading was very heavy, mostly solid rock, and consequently it will give a solid road-bed which will be hard to excel. The total length graded for the second track is about 35 miles, all but three miles of which is on the Middle Division.

This company is rebuilding its telegraph lines the entire length of the road, and they make a very fine appearance. On the Eastern Division the road has been finished from Sunbury to Williamsport; also about 15 miles on the Middle Division has been finished.

## Northern Central.

On Sunday, July 20, the Pennsylvania Railroad Company began operating the Baltimore Division, and the Philadelphia & Erie the Susquehanna Division, of the Northern Central Railway. The Susquehanna Division is attached to the Eastern Division of the Philadelphia & Erie, extending the division from Marysville to Renovo, 140 miles, the passenger engines running through from Harrisburg to Renovo.

## The Sale of the Central Pacific.

Referring to the reported consummation of the sale of the Central Pacific Railroad, the San Francisco Bulletin of the 8th inst. says: "These capitalists made a proposition to buy four-fifths of the Central Pacific Railroad, that being the interest owned by Huntington, Hopkins, and their eastern associates. It was proposed that Hopkins and Huntington should each retain one share for the present, and should continue for some further time in the directory of the road. There was not much difficulty, we believe, in coming to an understanding as to the outlines of the bargain, but when it came to details the views of the contracting parties were so wide apart that to this day the gap has not been bridged over, and the bargain is reported off. These are substantially the facts. It is quite possible that the bargain may yet be consummated. Those considered well up in financial matters on this side of the country believe that a sale at no distant day will be a necessity. The company borrowed a very large sum of money of capitalists in this city last year, and these obligations must in some way be met. The money was taken out of the State, going to pay floating debts, interest on bonds, etc. It was taken at a time and in a way to

produce a financial consternation here such as had been rarely known. All kinds of business was adversely affected. With a good harvest everybody was looking for a very easy money market. But when the reverse came, the real causes not being fully understood at the time, many declared in the bitterness of disappointment that 'another good harvest would ruin the country.' The capitalists, who have proposed to buy a controlling interest in the road, are the representatives of creditors to the company in very large amounts. If the transfer were made, they would be very likely to take a hand in the management of their own property. They would bring to that management executive talent which has made them millionaires in other lines of business.

## New York, Utica &amp; Ogdensburg.

An injunction has been granted to restrain Henry Cummins, who claims to be President of this company, from interfering in its affairs and from removing any of its books or papers.

## Des Moines Valley.

This company issued a general order on the 3d, announcing that no more passes would be granted, except to its employees; but that all trip and season passes already issued would be good until used, or expired.

## Wisconsin Railroad Company.

A telegram from Madison, Wis., dated the 19th, says: "Mr. Cary, the attorney of the Milwaukee & St. Paul Railway Company, has made a proposition on behalf of the Wisconsin Railroad Company, of which he is the President, to Gov. Washburn, asking that the State shall give a guaranteed title of the land-grant, and offers a general bond to the amount of \$300,000 as security for building the road. While the Governor desires to make the bond as easy and the terms as liberal as possible, yet he can only give a quit-claim title, and such a bond as Mr. Cary proposes to give, he is advised by the best lawyers in the State, would be valueless, and demands some penal sum per mile for the failure to build the road according to the provisions of the law. Mr. Cary claims that \$5,000 is excessive. The Governor requests the company to name a reasonable amount. To this proposition Mr. Cary replies that he declines to give bonds for any sum whatever; so that the building of the roads will probably fall through for the present."

## Contracts.

Proposals for additional dredging in the Appomattox River will be received until noon of July 25 by Maj. William P. Craighill, U.S.A., Union Bank Building, Baltimore.

The Boston Board of Harbor Commissioners will receive proposals until noon of August 20 for building about 300 feet of light and 1,300 feet of heavy sea-wall on Fort Point Channel and the main channel of Boston Harbor, and for filling about 1,000,000 square feet of flats, and for a considerable amount of dredging, all to be done by October 1, 1876.

## Harlem River &amp; Port Chester.

This road, which is virtually a loop line of the New York, New Haven & Hartford, extending from Mott Haven by a route nearer Long Island Sound than the old road to Port Chester, New York, 20 miles, has received proposals for the erection of five depot buildings on the line. The Engineer of this road is H. G. Scofield, and his office is at the corner of One Hundred and Thirty-third street and Boston road, Mott Haven. One train a day is run over the ten miles of road between Mott Haven and New Rochelle, for the accommodation of people on the line, though it is not yet open for business.

## Long Island Central.

The track on the extension southward is laid from Bethpage Junction to the crossing of the South Side road, a distance of five miles.

## North Pennsylvania.

Through cars are now run from Hackettstown, N. J., over the North Pennsylvania, Lehigh Valley and the Morris & Essex Division of the Delaware, Lackawanna & Western. This arrangement is made to accommodate the summer travel from Philadelphia to Schooley's Mountain, a noted summer resort near Hackettstown.

## Philadelphia &amp; Reading.

It is reported that this company intends to establish a large coal depot on Staten Island, at Stapleton, on New York Bay. A road, it is said, is to be built across the island with a suspension bridge across the Kills between Staten Island and New Jersey. It is not stated whether the company intends to use existing lines across New Jersey or to build a new one.

## Cayuga Northern.

Nearly all the right of way for this road has been secured and the contracts for the grading are to be let very soon. The road is to extend from Cayuga, N. Y., northeast to the main line of the New York Central near Port Byron. It will be about 12 miles long.

## Columbus &amp; Toledo.

The people of Delaware, Ohio, have raised \$100,000 for this road by private subscriptions to the stock.

## Mississippi Central.

Trains now run through regularly to Milan, Tenn., over the recently completed section of the extension from Jackson to Cairo. The connection with the Memphis line of the Louisville & Nashville is now made at Milan instead of at Humboldt, as formerly.

## St. James &amp; Chamois.

A railroad is proposed, to run from St. James, Mo., on the Atlantic & Pacific Railroad (104 miles from St. Louis) northward to Chamois on the Missouri Pacific. The road would be about 60 miles long, and would pass through heavy deposits of iron ore.

## Schenectady &amp; Susquehanna.

The amount of the first mortgage bonds of this road, which was recently sold under foreclosure, was \$400,000, and the unpaid interest \$28,000. The capital stock was \$200,000. The purchasers have given notice that the interest due will be paid on presentation of the coupons at the National Bank, Schenectady, N. Y.

## Brunswick &amp; Albany.

It is reported that a compromise has been effected between the bondholders and other creditors of this road. By mutual consent a decree of foreclosure was made by the court at Brunswick, Ga., July 12, and the road ordered to be sold. Messrs. Bacon, Hood, Hines, Nichols, Harris and Lochrance were appointed commissioners. The sale is to take place October 15, and of the proceeds \$150,000 is to be paid into court at once, and the balance as called in by the commissioners. This money is to be used in making a settlement with the contractors at the rate of 50 cents on the dollar. The contractors have agreed to accept these terms.

## Central, of New Jersey.

The following circular has been issued to the stockholders: "It has been deemed desirable to consolidate the stock of the Newark & New York, the Perth Amboy & Elizabeth and the High Bridge railroads with the stock of the Central Railroad Company of New Jersey. The above are all branches of the main road, and the stock is entirely the property of the Central, and included among its assets. By the provisions of the charter the assent of three-quarters in interest of the stock-



holders is required before this consolidation can be made, and though the transaction is formal this provision has to be complied with. This asset has been already given to the purchase of the Newark & New York Branch, but as it was not immediately acted on it has been deemed safer to have the authority renewed. Stockholders are requested to sign their assent."

The Newark & New York road is about seven and one-half miles long, from the junction with the Central at Communipaw to Newark, and the capital stock is \$1,000,000. The High Bridge road is intended to extend from High Bridge, N. J., to Chester, 15 miles, and some four miles are completed. The Perth Amboy & Elizabeth is the northern section of the Long Branch line.

Work on the third and fourth tracks from Elizabeth to Easton is well advanced, and track-laying is going on.

#### Southwestern & Georgia.

The track on the Blakely Extension is laid to Arlington, Ga., and trains will shortly be running to that point. Between Arlington and Blakely the grading is all done and the bridges built, except on a short section from Arlington west. Tracklaying will begin as soon as the iron can be procured.

#### Pittsburgh, Wheeling & Kentucky.

The County Commissioners of Ohio County, W. Va. (the county in which Wheeling is situated), having made an additional subscription of \$15,000 to the stock of this company, in which the county already holds \$225,000, suit was brought and an injunction obtained to prevent the money being paid until a vote of the people had been taken. The County Commissioners thereupon ordered an election to be held August 19, on the question of subscribing the additional \$15,000.

The company has asked that a committee be appointed to investigate its accounts.

#### New York & Washington.

The "Pennsylvania Air Line," recently established between these cities, which was anything but an air line, taking quite a circuitous route between Philadelphia and Baltimore, by way of the Pennsylvania Railroad to Dillerville, the Columbia Branch to Columbia, the York Branch to York, and the Northern Central Railroad to Baltimore—in all a distance of 153 miles, against 100 by the Wilmington route—has been suddenly vastly improved and shortened by the Philadelphia, Wilmington & Baltimore roads coming into the line, thus obviating the long circuit. Heretofore the one advantage of the "Pennsylvania Air Line" was its rapid passage through Baltimore, through the new Baltimore & Potomac Tunnel, and this was offset by the greater length of the line. Now, however, the advantage is kept and the disadvantage got rid of, for the "Pennsylvania Air Line" will be very nearly the same length as the old route, the difference in the length of the Baltimore & Ohio and Baltimore & Potomac routes from Baltimore and Washington being very small.

It is stated that the reason why the Philadelphia, Wilmington & Baltimore has not hitherto made connections with the Baltimore & Potomac is that no satisfactory arrangement could be made with the Union Railroad Company, through whose tunnel the connection is made. This matter, however, has now been settled.

#### Selma, Marion & Memphis.

The county court of Shelby County, Tenn., after investigating the affairs of this company, refused to issue any more of the bonds voted to the road, on the ground that the company had violated its contract and used some of the money outside of the county. The whole amount voted was \$500,000, of which \$200,000 has been issued.

At a meeting of subscribers to the stock in Memphis, July 16, it was agreed to make a proposition to the county court at its next meeting, for that body to issue to the company the third series of bonds, amounting to \$100,000, the merchants of the city subscribing money enough to complete the road through to Holly Springs, Miss.

#### Chesapeake & Ohio Canal.

The surveys, which Congress authorized at its last session, for an extension of this canal from Cumberland, Md., to the Ohio River are shortly to be commenced.

#### Washington, Cincinnati & St. Louis.

The contract for 65 miles of this narrow-gauge road has been let to J. A. Lowenback and J. W. F. Allen, who are to commence work at once and complete the grading in twelve months. This section of 65 miles will extend from Harrisonburg, Va., west to Monterey, in Highland County.

#### New York & Oswego Midland.

The date of the opening of the road for through traffic from New York to Oswego has not yet been announced. The work of ballasting the track recently laid is being pushed forward. The final completion of the main line is to be formally celebrated by an excursion over the line.

#### Boston, Hartford & Erie.

A petition for the formal dissolution of this (the old company) has been filed in the Superior Court at New Haven, Conn.

#### New Jersey & New England.

It is said that this company (originally the Caldwell & Milburn) has secured funds and will at once commence the survey of the line. The road is to extend from New Brunswick, N. J., northward to the New York State line and thence to the projected suspension bridge over the Hudson River.

#### Old Colony.

The extension of the Cape Cod Division from Wellfleet, Mass., to Provincetown, 15 miles, is completed and was to have been opened for travel, July 22. The road now extends almost to the extreme point of the cape.

#### Memphis & Raleigh.

Shelby County, Tenn., has indorsed the bonds of this company to the amount of \$50,000, and it is said that work will be resumed at once. The grading is nearly completed, and some little track has been laid and some rolling stock purchased. The road is of 3-foot gauge and will be 12 miles long.

#### Hamilton, Lacon & Eastern.

The right of way for this road has been secured and the contracts let for the grading from Chicago southwest to the Wilmington coal fields, a distance of about 48 miles. In this distance there is no grade exceeding 17 feet to the mile. It is reported that the construction of the road will be pushed forward to this point as rapidly as possible in order to secure the coal traffic for the road. When the road is completed to this point the work will be pushed on westward through Lacon to Hamilton, opposite Keokuk, Ill. The whole length of the line from Chicago to Hamilton will be 271 miles.

The managers hope to be able to enter Chicago over the Kinzie street track of the Chicago & Northwestern, and negotiations to that end have been commenced, but nothing definite has been decided.

The general contractors, Richard P. Morgan, Sr., & Co., of Chicago, claim that the means for building the road have been secured and part of the iron already contracted for.

#### Montclair.

The difficulties which have beset this company for some time have culminated in an application to the Chancellor of New Jersey by McArthur & Co., contractors for the construction of the tunnel on the Morristown Branch, and other creditors for

an order appointing a receiver or trustees to take possession of the road. The Chancellor, after hearing the arguments, made an order appointing Elias M. Miller, of Newark, N. J., Mason Loomis, of Montclair, N. J., and Conrad N. Jordan, of Englewood, N. J., trustees to take possession of the road and all property of the company.

The road, which has been under construction for several years, is now in operation from the junction with the New Jersey Midland at West End to Monks', 35½ miles, and is graded for six miles further to the New York line near Greenwood Lake. Some work has also been done on a branch from Woodside to Orange, and another branch from Montclair to Morristown. Some time ago a temporary lease, with an agreement for a permanent lease, was made to the New York & Oswego Midland Company, which is now operating the road. It is, however, now stated that under its charter the Montclair Company had no power to make any such lease. The trustees will probably be empowered by the Court to sell the road in order to meet its liabilities.

By the latest statement published (March 1, 1873) the capital stock paid in was \$697,175 (the authorized amount being \$2,000,000), the amount of first-mortgage bonds (which are indorsed by the New York & Oswego Midland) is \$1,800,000, and of the income bonds, \$888,400, making the total amount of stock and bonds \$3,385,575. There was also at that time a floating debt of \$701,158.91, which has certainly not been diminished since. The total cost of the road is thus \$4,086,733.91, or over \$100,000 per mile.

It is not yet known whether any arrangement will be made for continuing to operate the road.

#### New York, Boston & Montreal.

The contract for the construction of the Putnam & Dutchess Division has been awarded to V. W. Warren, of Carmel, N. Y. The division is about 23 miles long, and will extend from the New York Division, near Lake Mahopac, north to a connection with the Dutchess & Columbia Division.

The masonry of the bridge over Croton Lake, N. Y., two miles above the Croton dam, is all completed and ready for the iron superstructure, much of which is on the ground.

#### International & Great Northern.

It is said that a contract has been let for grading the Great Northern Division for 15 miles north of Minneola, Texas, the present terminus.

#### Kansas Central.

It is reported that this company has succeeded in placing its bonds, to the amount of \$2,000,000, and will at once go to work on the extension of its (narrow gauge) road westward.

#### Chicago & Canada Southern.

L. F. Barker, of Batavia, Ill., has a contract for the grading of a section, 12 miles long, of this road in Steuben County, Ind., with much heavy work. He has between 200 and 300 men working on it.

#### Denver & Rio Grande.

A correspondent of the Chicago Tribune writes that this road is to be extended, as soon as possible, from Pueblo to the San Luis valley, and that the section from Pueblo to Huerfano, 40 miles, is to be ready for the iron by the 1st of September.

#### Milwaukee, Lake Shore & Western.

The branch from Manitowish, Wis., to Two Rivers (about six miles) is all graded and the ties are being put down.

#### Atlantic & Gulf.

The surveys for the extension of this road from Bainbridge, Ga., west to a connection with the Mobile & Montgomery road at Pollard, Ala., have been completed. The distance is 165 miles, and the country being nearly level the work will be very light.

#### A Wooden Railroad in Arkansas.

A company is being organized at Washington, Ark., to build a wooden railroad about eight miles long from that town east to the Cairo & Fulton road.

#### Pullman Cars for England.

The coaches already constructed in Detroit and shipped to England to run on the Midland Railway consist of three parlor cars and three sleeping cars. They are to be erected at the Midland's shops in Derby. Mr. A. B. Pullman and the Mechanical Superintendent of the Pullman Company, Mr. Longstreet, went with the cars.

#### Illinois Freight Rates.

East St. Louis to Cairo and Cairo to East St. Louis rates are, by the only route open (Belleville & Southern Illinois from East St. Louis to Duquoin, and Illinois Central from Duquoin to Cairo), which is 148 miles long, for the four classes 55, 45, 35 and 31 cents per hundred; 40 cents per barrel for flour, 19.2 cents for wheat, 16.2 cents for other grain, 17.05 for lumber, \$40 per car-load for horses, \$32.20 for cattle and hogs, \$28 for sheep, \$24 for soot coal and \$44, \$38, \$33 and \$28 for classes A, B, C and D.

#### Portland & Ogdensburg.

This railroad is now open to the foot of the mountains at Upper Bartlett, twelve miles above North Conway, N. H. Work was begun on eighteen miles of the line last autumn, and the contractors, Messrs. Foller & Harding, have now completed two-thirds of this distance and trains are running thereon. A correspondent writes:

"Those who have been skeptical as to the practicability of a line of railroad through the Notch of the White Mountains are now ready to acknowledge their mistake and admit that it will be built, and that too at an early day. The contractors are men of energy and are determined to accomplish that which they have undertaken in the shortest time possible."

#### Minnesota & Northwestern.

The road bed, franchises and other property of this company were sold under foreclosure at Mankato, Minn., July 9, by the attorney for the trustees of the mortgage. It was bid in by H. A. Taylor and W. Mann, for \$1,000. The road is graded from Wells, Minn., on the Southern Minnesota, northwest to Mankato on the St. Paul & Sioux City, a distance of about 38 miles. It is intended to extend from the State line of Iowa to St. Cloud, a distance of 135 miles. The amount of the bonds and interest is about \$500,000.

#### Missouri, Kansas & Texas.

In the case of this company against the Kansas Pacific, the Davis County (Kan.) Circuit Court has decided that the lands in controversy, which amount to about 100,000 acres, belong to the Missouri, Kansas & Texas Company.

#### The New Jersey Railroad Decision.

The Trenton Gazette speaks as follows of the decision of the New Jersey Court of Errors and Appeals, the court of final resort in that State, that "the lease of the property of the United Companies of this State to the Pennsylvania Railroad Company, effected under the authority of the act of the Legislature of March 17, 1870, is invalid and null and void." The act of 1870 provided "that it shall and may be lawful for the said United Companies, by and with the consent of two-thirds in interest of the stockholders of each, expressed in writing and duly authenticated by affidavit and filed in the office of the Secretary of State, to consolidate their respective capital stocks, or to consolidate with any other railroad or canal company or companies in this State or otherwise." This word "otherwise," which

we have italicized, destroyed the whole intent and purpose of the act. If, as has been alleged, this word was inserted for the specific purpose of effecting the great object in view, viz., the lease, and was selected for its ambiguity as an adroit means of hiding this purpose from the Legislature, it is one of the most conspicuous examples of cunning overleaping itself on record. The Court yesterday decided that the act in question was constitutional: that the Legislature had a perfect right to pass a law validating a lease between the United Companies and foreign corporations; but that the act in question authorized no such lease to outside corporations because the word "otherwise" did not mean elsewhere. They, therefore, declared the lease of the United Companies to the Pennsylvania Railroad Company, under that act, invalid.

What the practical effects will be cannot yet be certainly ascertained. It is not likely, however, that it will amount to much. The right to effect such a lease under an act of the Legislature having been affirmed, there is little doubt that the requisite steps will be taken at the earliest opportunity to secure the proper authority under which to act. The parties who formerly opposed the lease, and originally brought the suit under which it has just been declared invalid, are understood to have long ago abandoned their opposition, and notified the Court to that effect, but the Court decided that the case should go on. The case is now remitted to the Court of Chancery, where the act passed by the Legislature last winter validating and confirming the lease may be brought in, and where the fact of the lapsed opposition of the original contestants may be taken cognizance of. This will probably result in the dissolution of the injunction, and the confirmation of the lease.

The Newark Advertiser, after saying that the decision can hardly enable any one to enjoin the lease now, because "the equities are changed" by the quieting of the claims of the discontented shareholders, and an act of the Legislature this year, says:

"But if, as we suppose, this decision makes no change in the present condition of affairs, it suggests certain possibilities. Supposing that the Pennsylvania Company find that there is a shadow on the validity of their lease which may bring on a prolonged and vexatious litigation, and suppose, also, that they find that they are not earning the 10 per cent. per annum they are paying upon the lease, as probably they are not, just now, in view of their heavy expenditures for construction. They can then accept the decision, concede the invalidity of the lease, throw it back into the old hands and run trains over the new line they are now building across the State under the general law. They have two strings to their bow, and the position of affairs which would have been dangerous in 1872 is not at all so now. If this decision had been an absolute reversal without conditions, it would not have cut off the Pennsylvania from its through connection with New York by its new line. As the case now starts again *de novo*, we presume that the contestants of the lease will be content with having thrown the costs of suit upon the Pennsylvania. What they can gain by another trial is too dim and uncertain to warrant a fresh litigation."

#### Utica, Ithaca & Elmira.

On the extension of this road from Van Ettenville, N. Y., to Horseheads, there will be two iron trestles (both now under construction), one of which will be 420 feet long and 150 feet high at the highest point, the other will be 300 feet long, and of great height. The longest of these works will be erected at an expense of \$29,000. The other will cost \$17,000.

#### Chicago & Michigan Lake Shore.

The Muskegon & Big Rapids Branch is completed to Big Rapids, Mich., and opened for travel. The whole length of the new branch is 55 miles. It has been open for some time from Muskegon to Fremont Center.

#### Canada Pacific.

The surveys for the western end of the line were commenced at Victoria, British Columbia, July 18.

#### Lowell & Andover.

Application has been made to the Supreme Court of Massachusetts for an injunction to prevent the lease of this proposed road to the Boston & Maine. It is claimed that the lease is without authority of law and contrary to the best interests of both roads. After a preliminary hearing, the case was adjourned till October.

#### Sioux City & Pembina.

The contracts for grading several miles of this road have been let.

#### St. Paul & Sioux City.

The headquarters of the supply department have been moved from Shakopee, Minn., to Sioux City, Ia.

#### New York Central & Hudson River.

The track of the Auburn Branch is to be relaid with steel rails. Some trouble was occasioned recently by a strike among the freight train employees at the Rochester Division. The company, however, acceded to the demands of the men, and work was resumed. The strike was caused by the refusal of the company to allow extra pay when more than one trip was made in a day, such extra pay having been always previously allowed.

#### Syracuse Northern.

This company has raised \$320,000 by the sale of second mortgage bonds, and paid off its floating debt.

#### Salt Lake City, Sevier Valley & Pioche.

This narrow-gauge Utah road is progressing rapidly. It has received its first locomotive from the Brooks Locomotive Works, at Dunkirk, N. Y., and another is completed and ready to ship at the Grant Locomotive Works, in Paterson, N. J. Several cars have also been received, and the iron for the road has been shipped and is daily expected.

#### Marshfield & Hardwick.

The preliminary surveys for this road are completed. It is to extend from Hardwick, Vt., south about 18 miles to Marshfield.

#### Baltimore Short Line.

A correspondent informs us that the whole line of this road is now under contract. On the western end of the line, where there is some heavy work, the grading is being pushed forward rapidly. The sections recently let on the eastern end of the line are much lighter work. The road, which is a cut-off or loop-line of the Marietta & Cincinnati, extends from Warren Station, O., to Belpre, the terminus opposite Parkersburg, W. Va. The distance between these points by the present line is 39 miles.

#### Grand Rapids & Indiana.

The track is now laid to a point 35 miles north of Fyfe Lake and 137½ miles from Grand Rapids, which is 13 miles further than by the last accounts. The grading is nearly completed to Little Traverse, which is about 35 miles beyond the present end of the track.

#### St. Louis & Union.

A railroad is proposed from St. Louis westward through Franklin and Brush Valley to Union, in Franklin County, a distance of 50 miles. It would be, for the most part, parallel to the Missouri Pacific.

#### Atchison, Topeka & Santa Fe.

The Leavenworth (Kan.) Times says that this company has made arrangements to use the St. Joseph Stock Yards. Its stock trains will be run from Atchison over the Wathena & L



**Doniphan road to Wathena and thence over the St. Joseph & Denver City track into St. Joseph.** Arrangements have been made with the St. Joseph & Denver Company, and the other road has been already leased by the Atchison, Topeka & Santa Fe.

#### Davenport & St. Paul.

This company, whose trains now enter Davenport, Iowa, on the Chicago, Rock Island & Pacific track, has petitioned the City Council of that city for right of way for an independent track into the city.

#### Kansas Midland.

The Lawrence & Topeka Railroad has been transferred to this company, which agrees to have the road completed in one year from date.

#### Greenville, Columbus & Birmingham.

Work on the grading of this road is going on between Winona, Miss., and Carrollton. The road is to extend from Greenville, Miss., on the Mississippi, east across Mississippi and Alabama to Birmingham, Ala.

#### Pennsylvania—New York Division.

The grading of the third and fourth tracks between Elizabeth, N. J., and Rahway (five miles) is about completed. The company is negotiating for the right of way for the third and fourth track between North Elizabeth and Waverley.

The news train, which left New York for Philadelphia at 3:30 a. m., has been suspended, and in its place the midnight train runs through to Philadelphia.

Through cars are now run from Jersey City to Cape May, the train leaving New York at 12:30 p. m.

#### Ware River.

The track on the extension to Winchendon is laid from Gilbertville, Mass., north to Barre Plains, a distance of about seven miles.

#### Boston, Concord & Montreal.

The branch from near Littleton, N. H., to the Twin Mountain House is opened as far as Bethlehem, about eight miles. From Bethlehem to the Twin Mountain House the work is nearly completed and the road will soon be ready for business.

#### Pacific Mail.

The board of directors has authorized the President to raise \$700,000 to meet the immediate necessities of the company. A part of this will probably be raised on the security of the company's real estate in San Francisco. Some of the older steamers are also to be sold. In addition to the amounts needed for payments on steamers now building, a considerable sum is required for repairs of the present fleet. The work on the new steamers, which are much needed, is to be pushed forward.

#### Hudson Suspension Bridge & New England Railroad Company.

The bridge which this company proposes to build across the Hudson River at Poughkeepsie, N. Y., is to be a suspension bridge, with a clear span of 1,660 feet. The whole length of the bridge and approaches will be 3,450 feet, and its height above the water 150 feet. There will be two decks, one for the railroad and one for ordinary traffic. The estimated cost is \$3,000,000.

#### Mississippi Valley & Western.

The grading is nearly completed from Dardenne, Mo. (where connection is made with the St. Louis, Kansas City & Northern), to Louisiana. From that point to West Quincy a large force is at work and it is expected that the grading will be finished early in August. The company has purchased the necessary iron, to be delivered as wanted. From West Quincy to Keokuk, Ia., 40 miles, the road is already in operation.

#### Mississippi Valley Transportation Company.

It is said that negotiations are going on for the consolidation of this company with the St. Louis & Memphis Packet Company and the purchase by the consolidated company of all the steamers now plying between St. Louis and New Orleans, some 17 in number. These with the Memphis and Vicksburg boats and the tugs and barges owned already by the Mississippi Valley Company would give the new company control over a large fleet and an enormous business.

#### Contracts.

The Supply Department of the Erie Railway received bids up to the 23d inst. for the construction of two scows for the transportation of freight cars.

Major William P. Craighill, U. S. A., will receive bids for dredging in Washington and Georgetown harbors, until noon of August 11, at his office, Union Park Building, Baltimore.

Lieutenant-Colonel John Newton, U. S. A., will receive proposals for the construction of dykes in the Hudson River, near Albany, until noon of August 11, at his office, corner of Houston and Greene streets, New York.

#### Montgomery & Eufaula.

The bond holders are invited to call at the office of George Opdyke & Co., New York, to arrange for a lease of the road and protect their interests.

#### Louisiana Central.

This road is intended to run from New Orleans northwest to Alexandria, La., a distance of about 180 miles. It is proposed to use the track of the New Orleans, Mobile & Texas from New Orleans to Donaldsonville, 63 miles. A correspondent of the New Orleans *Picayune* gives the following statement of the condition of the line above Donaldsonville:

"From Donaldsonville in a direct line to Rosedale, where the Baton Rouge & Grosse Tete road crosses, is about 30 miles, 10 of which are graded.

"From Rosedale to the Atchafalaya, say 24 miles, the grading is complete, and on 12 miles thereof (the continuation from Rosedale of the road from Baton Rouge) the cars are running.

"From the Atchafalaya to near Holmesville, about thirty miles, the grading is complete, except an insignificant hiatus.

"From the end of the grading near Holmesville to Leconte, above Cheneyville, about twenty miles, no work is done.

"From Leconte to Alexandria, about sixteen miles, the grading already exists whereon a railroad was operated for many years.

"I know every inch of the country and speak from actual knowledge."

No work, we believe, is now being done on the line.

#### Gilman, Clinton & Springfield.

A bill for an injunction forbidding the company to lease its road to the Pennsylvania Company, preferred by Joseph J. Kelley, who claims to own 10,000 shares in the company, charges that the directors made a contract with the Morgan Improvement Company, of Pennsylvania, for bridging, tiring, iron and equipping the road at extravagant prices, payable in the company's bonds and in municipal bonds received by the railroad company for its stock, which are assumed to be fraudulent, because the Improvement Company sublet part of the work at very profitable rates to a firm in which one director was a partner, and another part to a person who conducted the work for the Vice-President, who received the profits. The bill charges also that the contract was never submitted to the stockholders for their approval, and that several directors of the railroad company were also members and directors of the Improvement Company; also that several directors are members of the coal

company, with which they, as officers of the railroad company, have made an unduly favorable contract for transportation. The appointment of a receiver was asked for and an injunction restraining the holding of a meeting on the 10th of July to ratify the lease to the Pennsylvania Company.

A temporary injunction was granted.

#### Nashua & Rochester.

The grading is about completed from Rochester, N. H., south to Epping, about 20 miles.

#### Worcester County Central.

The surveys of this road through the towns of Leicester, Spencer and Brookfield, a distance of 11 miles, have been completed, and a very good line found.

#### Macon & Brunswick.

Governor Smith, of Georgia, has authorized Mr. G. H. Hazlehurst, the Receiver, to accept the so-called currency, issued by this company, in payment for freight and passage over the road. It is said that this currency can all be taken up in a few months in this way.

#### Lafayette, La Salle & Clinton.

The stock subscriptions for this projected road now amount to about \$50,000 in La Salle, Ill., and \$30,000 in Peru, nearly completing the amount required from those towns.

#### Selma, Marion & Memphis.

The County Court of Shelby County, Tenn., has been investigating the affairs of this company, in aid of which the county voted \$500,000, of which \$200,000 has been paid. It is claimed that an extravagant amount has been expended on the work done in the county. It is probable that the County Court will refuse to pay the balance of the subscription to the company.

#### Texas & Pacific.

This company having made application to the New York Stock Exchange to have its securities placed on call, has submitted the following statement:

Organized under acts of Congress, March 3, 1871, and May 2, 1872. Length of road: From State line to Fort Worth, 198 miles; from Marshall to Texarkana Junction, 59 miles; from Texarkana Junction to Fort Worth, 236 miles; from Fort Worth to San Diego, 1,434 miles; total, 1,937 miles. Road leased from Texas State line to Shreveport, 21 miles; number of miles of road completed and equipped, 115; number of miles of road graded, ready for track, 287. Iron delivered and being delivered for 225 miles of track to be laid during the year.

By July 25 the road of the Texas & Pacific Railway completed between Shreveport and Dallas, 192 miles; from Marshall to Jefferson, 17 miles; from Jefferson to a point of connection with the Cairo & Fulton Railway line by December 1, 1873, 69 miles. First mortgage six per cent. gold construction bonds, dated June 1, 1872, mature June 1, 1912. Interest payable December 1 and June 1. Principal and interest payable in New York or London at the option of the holder, free of taxes. Denominations \$1,000. Issue of bonds \$40,000 per mile on road as constructed and equipped, \$77,480,000. Trustees—J. Edgar Thomson, Samuel M. Felton. Bonds registered or coupon, at option of the holder. These bonds are secured by a one per cent. sinking fund, and by first mortgage upon the railway of the company, its equipment and franchises, and upon fifteen millions of acres of land, donated by the Government of the United States. They are convertible into, or receivable at par and interest in payment of any of the said lands. None of these bonds as yet issued. Authorized capital stock, \$50,000,000; shares, \$100 each. Equipment on line as follows: Engines, 21; passenger and baggage cars, 19; freight cars, box and platform, 575; road and construction cars, 58. Under the act of Congress and the legislation of the State of Texas, the company has consolidated with itself the Southern Trans-Continental Railway Company and the Southern Pacific Railroad Company, corporations chartered by the State of Texas. The company has a floating debt incurred in the purchase of these roads of one million dollars, to meet which the company has unsold first-mortgage bonds amounting to \$1,800,000, and stock subscriptions uncalled amounting to \$1,800,000.

The company has also on hand \$8,000,000 7 per cent. currency land grant bonds, being part of an issue of twenty millions of dollars, secured by mortgage upon thirteen millions of acres of land granted by the State of Texas. Earnings of the road, 66 miles operated during the past year, \$346,987. Transfer office, No. 50 Exchange place, New York. Officers: President, Thomas A. Scott; Vice-President, Wm. A. Wallace; Treasurer, Edwards Pierpont; Secretary, E. B. Hart.

#### Steamer Lines to Duluth.

A correspondent of the Chicago *Tribune* gives the following list of the lines of steamers running between Duluth and various other lake ports, some of which do not run regularly:

"The Chicago line, or Leopold's boats, consisting of the Norman, the Peerless and the City of Madison; the Union line, composed of four boats from Duluth to Buffalo; Eber Ward's line, the Central & Pacific, composed of nine boats from Duluth to Buffalo, which average 600 tons, and sometimes carry as much as 38,000 bushels of grain, connecting with the New York Central; the steamer Metropolis, of 425 tons—a side-wheel boat which cost \$35,000, and is owned by Duluth citizens, running to Marquette; the Canadian line, running from Sarnia and Collingwood to Duluth, composed of eight steamers, averaging 450 tons. The people of the town entertain the hope that the Atlantic, Duluth & Pacific Lake Company, or the Evans line of Buffalo, will conclude to commence trips, as at first intended, later in the season."

#### Syracuse & Chenango Valley.

This road was sold at public sale in bankruptcy, under order of the court in Syracuse, N. Y., July 8. The road was purchased by Mr. George F. Comstock, who represents the new company recently formed under the name of the Syracuse & Chenango Railroad Company, for the purpose of buying the road. The price paid was \$249,900, which, with the indebtedness which the purchasers must assume, will make the cost to the new company about \$800,000. It is said that the cost of the road thus far has been \$1,800,000. By this sale the stock, including \$500,000 held by the city of Syracuse, is wiped out.

The completed portion of the road extends from Syracuse southeast about 40 miles to Earlville, and it is intended to construct the road to a junction with the New York, Kingston & Syracuse.

#### Cincinnati Southern.

The President and directors of the Kentucky Central have proposed to the trustees of the Cincinnati Southern road to allow them the use of the Kentucky Central, on terms to be settled hereafter, provided the work of building the road is prosecuted from Lexington or Nicholasville. The proposition is under consideration.

#### California Central Narrow Gauge.

The board of directors have decided to make Tehama the northern terminus of the road. The company reports that the work from Benicia northward is being pushed forward, and it is hoped that the first section of 25 miles will be completed by February next. This first section comprises this heaviest work on the line.

#### Chillicothe & Brunswick.

This road was to have been sold July 23, under foreclosure of a mortgage of \$500,000. The road is leased by the St. Louis, Kansas City & Northern Company. The road is 36½ miles long

and extends from Brunswick, Mo., on the St. Louis, Kansas City & Northern, 186 miles from St. Louis, northwest to Chillicothe.

#### Sunbury & Lewistown.

The bondholders of this company are about to take steps to foreclose the mortgage on this road, the last two coupons (October, 1872, and April, 1873) not having been paid. The amount of the bonds is \$1,200,000. The road extends from Lewistown, Pa., on the Pennsylvania road, northeast to Selinsgrove, on the Philadelphia & Erie, and is 43½ miles long. It is leased and operated by the Pennsylvania Railroad Company.

#### International & Great Northern.

The Texas courts have decided that the act chartering the International Railroad Company is constitutional, and a mandamus will be issued to compel the State officers to sign and issue the bonds to which the company is entitled under its charter.

#### Wisconsin.

No further action has been taken in the case of this company, which was recently organized to build the roads required and take the St. Croix land grant. Governor Washburn adheres to his opinion that the law requires the company to give security to the amount of \$5,000 per mile that the first 60 miles of the main line will be built this year, and the company has not given the security. It seems probable that nothing will be done until the next meeting of the Legislature.

#### New York & Oswego Midland.

The last rail on this road was laid (as already noted) July 9. The tracklayers working from the two ends of the unfinished sections of the road met at Whirling Eddy on the Beaverkill, 180 miles from Oswego and 155 miles from New York, where the two last rails required to complete the construction, one inscribed with the name of Dewitt C. Littlejohn and the other with that of George Opdyke, were laid with much ceremony. A freight train left Oswego July 9 and ran through to Jersey City. Meantime the work of ballasting is going on, and it is announced that through trains will begin to run regularly about August 1.

The Western Branch of the Midland is now located from its present terminus at Solpio Center in Cayuga County, N. J., as far as Alabama in Genesee County. From Alabama to Lockport the engineers are at work on the line, which is intended to run to Suspension Bridge.

#### Eastern.

The survey for the new line from Kittery, Me., eastward through the towns of York, Wells and Kennebunk, to intersect with the present road, has been completed, and is reported to be feasible and easily constructed. The line, as located through the town of Wells, is south of the old post road, and but a short distance from the Ocean House.

Considerable improvements are in progress at the depot in Portland, Me. The main track running through the station has been moved south ten feet, graded up to the level with Commercial street, and now runs through the Maine Central station. The Maine Central building is to be taken down, when the track now running through it will be straightened by moving it several feet south. As soon as the grading of this track is completed, all Maine Central trains will run directly into the Eastern station.

#### Bangor & Calais Shore Line.

Surveys are being made for this line from Calais, Me., south to Pembroke, about 17 miles. The line crosses Machias River at the Mast Landing, about one-third of a mile below Whitneyville bridge.

#### Peoria & Eastern.

This company, which proposes to build a railroad about 240 miles long from Peoria, Ill., eastward to Fort Wayne, Ind., was organized at Peoria, Ill., recently.

#### Utica & Black River.

The track on the Carthage & Theresa Division is laid to Lafargeville, N. Y., ten miles beyond Theresa, the late terminus, and thirty-one miles from Carthage, the junction with the main line. Only seven miles of track remain to be laid to complete the line to the St. Lawrence at Clayton.

#### Midland Pacific.

Surveys are being made for an extension of this road from its present eastern terminus at Nebraska City, Neb., on the Missouri River, southward to St. Joseph, Mo. The road now extends from Nebraska City west to Seward, eighty-three miles.

#### Texas & Pacific.

The track is now laid to Mineola, Tex., 110 miles from Shreveport and 10 miles beyond Lake Fork, the last point reported. At Mineola a junction is made with the International & Great Northern road.

The track has been laid on the Jefferson Division from Marshall to Jefferson, 16 miles.

The latest time-table, which bears date July 1, shows three trains daily leaving Shreveport; a mail and express and a freight train, both running to Mineola, and an accommodation to Marshall and Jefferson.

The headquarters of Mr. C. P. Johnson, Master of Transportation, have been moved from Shreveport to Marshall.

The President of the company, Colonel Thomas A. Scott, sailed for Europe July 12, the object of his visit being, it is said, to place the bonds of the company abroad.

#### Rochester & Pine Creek.

A section six miles long has been completed and opened for traffic. It extends from Gainesville (on the Buffalo Division of the Erie Railway, 36 miles northwest of Hornellsville) northeast to Perry, N. Y.

#### Indianapolis, Cincinnati & Lafayette.

At a meeting held in Indianapolis, July 10, the directors voted to accept the transfer of the railroad from the receivers pursuant to the order of the Circuit Court of the United States. It was also voted that all persons holding positions on the road by appointment of the receivers be continued in office.

#### Old Colony.

The extension of the Cape Cod Division from Wellfleet, Mass., to Provincetown is nearly completed. It is expected that the track will be down and the road ready for use by the end of this month.

#### North & South Jersey.

The surveys for this road are to be commenced at once, and, it is said, arrangements have been made to put the road under contract as soon as it can be located. The road is to extend from Salem, N. J., northeast to a point near Bordentown, and thence north to Somerville on the New Jersey Central. The length of the road will be about 85 miles.

#### Central of New Jersey.

The following statement with regard to the dividend just declared is made by the President, accompanied with a comparative statement of the earnings and expenses for the past six months, given elsewhere:

"The above shows the net result of the business for the present year to the 1st inst. to be \$625,004.25 better than the previous year, which would have fully justified a dividend of 5 per cent. had not the dividends paid in 1873 exhausted the surplus of earnings. To restore these, the dividend has been limited to 4 per cent."